

UNIVERSITY OF DERBY

Contact, Emotion, Meaning, Compassion,
and Beauty as Pathways to Nature
Connectedness

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Preface

The work contained within this thesis has been solely authored by the doctoral candidate, with only guidance and direction given by the supervisory package. Where work has been submitted for publication and contained within this thesis, the candidate is the primary author, with only guidance given by the co-authors. The programme of research conducted for this thesis, the results obtained, and the wider reading and resulting thoughts and conclusions have been disseminated through various channels and are listed below:

Publications

- Richardson, M., Hallam, J. & **Lumber, R.** (2015). One thousand good things in nature: Aspects of nearby nature associated with improved connection to nature. *Environmental Values*, 24(5), 603-619. doi: 10.3197/096327115X14384223590131
- **Lumber, R.**, Richardson, M. & Sheffield, D. (in press). The seven pathways to nature connectedness: A focus group study. *European Journal of Ecopsychology*
- Richardson, M., Maspero, M., Golightly, D., Sheffield, D., Staples, V. & **Lumber, R.** (2016). Nature: A new paradigm for well-being and ergonomics. *Ergonomics*, advance online publication.

Other Media

- **Lumber, R.** (2014). Project Wild Thing. *The Childhood Experiences that make Nature Connected Adults* Retrieved from <http://beta.projectwildthing.com/posts/view/279>

Conferences

- A 10 minute presentation at New Horizons (2013) in Derby entitled: 'Let's all get Connected: A Focus Group Exploration of the Factors Involved in Connecting to Nature'
- A poster presentation at the first British Environmental Psychology Society (2014) conference in Sheffield entitled 'The Link between Biophilia and Nature Connectedness: Implications for Pro-Environmental Behaviours'

- A 10 minute presentation at Nature Connections (2015) in Derby entitled ‘Emotion, Meaning, Compassion and Beauty as Pathways to Nature Connectedness’.
- Invited speaker to Refloating the Ark: Connecting the Public and Scientists with Natural History Museums (2015) at the University of Manchester. A 30 minute presentation entitled ‘Investigating the Routes to Nature Connectedness through Natural History Museums’

External Projects

- A one-year paid evaluation of the impact of the newly created ‘notice nature feel joy’ gallery at Derby Museum on behalf of the University of Derby. This entailed designing the survey items, co-developing an app to administer the survey and in future, analysing the data and producing a report based on the results (2015-present).
- Invited to film a promotional video jointly for the National Forest and Forest Holidays on the wellbeing benefits of spending time in woodland that will be featured on their newly updated websites (2015)

Abstract

The cultural disconnect between humanity and nature that predominantly occurs in westernised, industrial societies has been linked to the current environmental issues of the 21st century. It has been suggested that reconnecting humanity with nature would help address anthropogenic environmental problems through behaviour change, while providing physical and mental wellbeing benefits to the individual. While the term connection to nature still implies a separation, it functions as a sous rature for dispelling the erroneous belief that humanity and nature are not one and the same. Nature connectedness is a subjective, multidimensional sensation/perception that an individual belongs to a wider natural community and while the outcomes of a connected relationship with nature have been frequently explored, the pathways that establish this connection have not yet been systematically investigated. While activities including walking in nature, noticing nature, gardening, environmental education, and outdoor pursuits have all been suggested to increase nature connectedness, the multi-dimensionality and subjectivity of the construct make a systematic investigation into the routes to nature connection difficult. The Biophilia Hypothesis offers a potential framework for investigating the pathways to nature connectedness through its nine values that describe the range of possible interactions humanity has with wider nature. Biophilia was therefore utilised as a framework for this very purpose in a systematic investigation into the pathways to nature connectedness. Five research studies were conducted that together form a systematic investigation, comprising of a focus group study (chapter four), two online surveys (chapter five), a face to face intervention (chapter six) and an online writing intervention (chapters seven and eight). The programme of research identified five pathways to nature connectedness; contact, emotion, meaning, compassion, and beauty which were then tested, with increases found in nature connectedness, vitality and pro-environmental attitudes across the two interventions. The thesis presents the first systematic investigation into the routes to nature connection, with the pathways utilised in two interventions that increased nature connectedness. The pathways have the potential to address the perceived separation between humanity and nature within westernised societies. The thesis finishes with a discussion of the possible application of the pathways by charities, public bodies, private enterprises, and in education settings when engaging individuals with nature in order to promote nature connection, wellbeing, and pro-environmentalism.

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and compassion in it and I wish you could have seen yourself as I saw you. I know that you have now returned to the wider universe and cycle of all things of which we are a part, but losing you nearly derailed everything, this thesis included. Rather than let that happen though, I dedicate this work instead to you. My hope is that this work will inspire more positivity in our world, just like you did in the lives of everyone you knew.

Chapter One – Introduction

The planet Earth has seen many distinct ages throughout its four and a half billion year existence, from the Ediacaran where the arthropods first evolved through to the Tertiary age that saw the evolution of the first homo-sapiens, throughout which, geophysical forces have shaped the environment (BBC, 2014). The Earth continues to change but rather than being shaped solely by physical forces, humanity has now become a global, geophysical force (Wilson, 2002) with the current age in which we live appropriately labelled the Anthropocene due to humanity's ability to shape the biosphere (Berkhout, 2014). It has been proposed that humanity has an evolved, innate desire to affiliate with nature that was advantageous to our survival. This innate desire is expressed through the nine values of the Biophilia Hypothesis that describe the range of possible interactions with nature (Kellert & Wilson, 1993). Unfortunately human actions and behaviours when interacting with nature can have a negative effect upon the planet and its ecosystems, with the harm caused through climate change and loss of species thought to be the most pressing issue currently facing humanity in the 21st century (APA, 2013). There is a growing realisation that the western cultural perception that humanity and nature are separate from one another (Catton & Dunlap, 1978) is leading to the degradation of the environment and loss of other natural species. The loss of nature may not only effect the ecosystems of which they are a part, but also other species as well, humanity included, as the negative implications for our physical and mental wellbeing as a result of the loss of nature are not fully known (Maller et al., 2009). What is clear, is that contact with nature, encouraged through the formation of a connected relationship with our wider natural community, leads to physical (Russell et al., 2013) and mental wellbeing benefits (Capaldi, Dopko & Zelenski, 2014), as well as to the possible enactment of pro-environmental behaviours (Arbuthnott, Sutter & Heidt, 2014). This has led researchers to focus on a connected relationship between humanity and wider nature in order to achieve the wellbeing and pro-environmental benefits it can bring (Tam, 2013).

It was this notion that inspired the programme of research for this thesis that began in January 2013 and from the outset, it was intended for the outcome of this body of research to have a practical application, initially focussing on subjective wellbeing (defined as the meeting of an individual's basic needs, the prevalence of positive moods

with purpose and meaning in life being present (Stevens, 2013). Over time it became clear that the benefits of exposure to nature were well researched within the body of literature, especially in regards to physical and mental wellbeing; only becoming more extensive with time, while the evidence base for the wellbeing benefits of connecting with nature are also emerging (see Calpaldi, et al., 2014; Russell et al., 2013). After exploring the literature, it became clear that while the wellbeing benefits of engaging with, and connecting with nature are well established, there was a paucity of research into the routes to nature connectedness; while research has focussed on why engaging and connecting with nature can be beneficial, getting people to engage and in turn connect is not as well understood. What will hopefully become clear over the course of this thesis is that no single definition of nature connectedness exists, with the various ethos' and measures used covered in chapter three. The lack of any single definition, along with the multidimensionality of the construct may explain why a systematic investigation into the routes or pathways to nature connectedness has not been attempted before. While attempts have been made to use particular activities to foster nature connectedness in participants, these have been conducted disparately and have often relied on simple contact through walking or outdoor pursuits. What is needed is a systematic investigation of the routes to nature connectedness (Zylstra, Knight, Esler & Grange, 2014) through the creation of a theoretical model that is then tested to ascertain the effectiveness of the identified pathways in increasing a connection with nature. This thesis will attempt to do this and in order to investigate the pathways to nature connectedness in a systematic manner the following aims were used to structure the investigation:

Aim 1: Explore how the nine values of the Biophilia Hypothesis relate to nature connectedness.

Aim 2: Identify and investigate the pathways involved in developing a connection to nature.

Aim 3: Create interventions that utilise the identified pathways.

Aim 4: Evaluate the identified pathways used in the interventions to determine whether they can increase nature connectedness.

Aim 5: Evaluate the identified pathways used in the interventions to determine whether they can increase subjective wellbeing and pro-environmental attitudes

In order to meet the aims of the thesis, five research studies were conducted that together represent the first systematic investigation into the pathways to nature connectedness. The purpose of this thesis is to present the theoretical underpinnings, research methodology used, the results obtained, and a discussion of the implications of the findings of the identified pathways to nature connectedness in one holistic piece. The structure of the thesis and the content of each chapter are described below.

Chapter Two: To begin the thesis, a literature review is presented that covers the perceived separation of humanity from nature as a result of anthropocentrism, the reductionist scientific method, religious ideology and the perceived superiority of man, and the philosophical and cultural underpinnings. Following this, the issues arising from this separation are discussed, followed by an outline of the potential solution; nature connectedness, what it is, the outcomes it has been linked to and the potential pathways that have been investigated. The chapter finishes with a rationale for the need to conduct a systematic investigation into the pathways to nature connectedness which is the purpose of this thesis.

Chapter Three: This chapter provides an overview of the numerous quantitative measures of nature connectedness for both adults and children, including the conceptual differences and similarities of the 13 measures presented. The overview recommends the future development of a shorter, more practical implicit measure of nature connectedness and finishes with the selection of the Nature Relatedness Scale (Nisbet, Zelenski & Murphy, 2009) that was used in the quantitative research presented within this thesis.

Chapter Four: Presents the first of five research studies that together investigate the pathways to nature connectedness, meeting aims 1 and 2 of the thesis. The study presented in this chapter details a focus group exploration of the pathways to nature connectedness from the perspective of 11 participants. The focus groups were structured around the nine values of the Biophilia Hypothesis with three focus groups conducted. Following the Thematic Analysis, seven potential pathways emerged; a scientific enquiry of nature; engaging the senses; creating idyllic nature; noting nature through artistry; nature conservation; growing food; engaging with wild nature. The research presented in this chapter acted as an initial enquiry, forming the basis of a further investigation of the pathways to nature connectedness using quantitative methods.

Chapter Five: Presents the main theoretical testing of the pathways to nature connectedness in a model created from the results of two online surveys that meet aims 1, 2, and 3 of the thesis. Once more the nine values of biophilia were used as a framework alongside the identified pathways from chapter three to create a set of 27 nature based activities that were used to investigate which interactions with nature led to nature connectedness. The two studies combined identified four potential pathways and a mediator as pathways to nature connectedness; contact, emotion, meaning and compassion, with beauty as a mediator. The theoretical model presented was the basis for the following two quasi-experimental studies that attempted to test the identified pathways through interventions that aimed to increase nature connectedness.

Chapter Six: Tested the theoretical model created in chapter five of the pathways to nature connectedness through a one hour quasi-experimental intervention with 72 undergraduate student participants; meeting the thesis aims 3, 4, and 5. Pre and post measures of nature connectedness and vitality were administered with participants taken on walks in small groups by the researcher that took place either within the campus building or in the outdoor greenspaces of the University of Derby Kedleston road site. While on the walk, participants took part in activities structured around the pathways with the walk's surroundings as the focus. The participants were allocated to one of three conditions; built activity, pathway activity or nature control. The subsequent ANOVA showed an overall main effect of condition on nature connectedness and vitality with only the pathway activity condition significantly increasing nature connectedness, while both the pathway activity and nature control conditions significantly increasing vitality. The results provide an initial confirmation of the pathway model presented in chapter five, but taking into account the brevity of the intervention and high amount of researcher guidance required, further testing of the pathways as an intervention is presented in chapter seven.

Chapter Seven: The applied testing of the identified pathways to nature connectedness that was presented in chapter six showed an increase in nature connectedness and vitality. Given that the study presented in chapter six lasted only for an hour with a large amount of researcher guidance, chapter seven presents a second online quasi-experimental study investigating an engagement with nature through the pathways. Participants engaged with nature via the pathways for a week, with minimal researcher guidance, by spending time in nature each day and completing a short writing task with the research meeting aims 3, 4, and 5 of the thesis. Participants in both the pathway and control conditions had

significant increases in nature connectedness and vitality, with only those participants in the pathway condition having a significant increase in pro-environmental attitudes.

Chapter Eight: Presents a Content Analysis of the reflective writing authored by participants in the pathway condition of the intervention study from chapter seven, in order to provide a deeper understanding of the nature connecting experiences involved with the identified pathways and to ascertain if compassion acted as a primer for the increase in pro-environmental attitudes. Nine themes emerged from the content analysis that supported contact, emotion, meaning, compassion, and beauty as pathways to nature connectedness while identifying possible barriers to nature connection.

Chapter Nine: Is the final chapter of the thesis, providing a summary of the research findings that contextualises the pathways of contact, emotion, meaning, compassion, and beauty with the literature covered in chapter two. The implications of the pathways are then discussed for future research and their application by charities and public organisations to connect individuals with nature, and improve their wellbeing, before a case study of the application of the pathways in Derby Museum is presented. The thesis then concludes with a summary of the research conducted and the novel contribution it provides.

Chapter Two – Literature Review

Before the body of research is presented that comprises the systematic investigation of the pathways to nature connectedness that was alluded to in chapter one, the thesis begins with an overview of the cause of the perceived separation between humanity and the rest of nature. Following this, nature connectedness will be defined, the benefit of being connected explained, before the potential routes to nature connectedness that are currently known are examined. This chapter provides the theoretical underpinnings and rationale for why a connection with nature is both necessary and beneficial for humanity, and is therefore an important area of study.

Defining Nature

A suitable starting point for a literature review and indeed thesis on the pathways to nature connectedness would be a definition of nature. While dictionary definitions are not always an ideal starting point, the definition provided by the Oxford English Dictionary (2015) is indicative of the prevailing western perception of what constitutes nature: “The phenomena of the physical world collectively, including plants, animals, the landscape, and other features and products of the earth, as opposed to humans or human creations” (p.1). This definition can be considered to have an exemptionist ethos as humans are specifically excluded from the categorisation of what is nature. Nature is of course comprised of natural features including trees and vegetation, animals and aspects created by these organisms. It also includes, but is not limited to, the landscape, the changing of the seasons, wind, rain, sunlight and the flow of rivers or waves in the sea (Hartig et al., 2011). While the Oxford English Dictionary’s definition is not entirely correct, the approach it takes is useful; in understanding what nature is, it is also useful to know what nature is not. Nature is often contrasted against the built environment comprised of buildings and other human artefacts, with the ability to change physically suggested to be a decisive factor when separating nature from the built environment (Williams, 2002). It is interesting to note that aspects of the environment and landscape exist, that would not be considered natural if a strict adherence to the dictionary’s definition was kept. There are elements of human design that can be placed in the natural

category such as parkland and managed woodland, while trees lining built roads can still retain their categorisation of nature (Hartig et al., 2010).

The contrast between what is natural and what is not can be paradoxical. In a study looking qualitatively at western individual's conceptualisations of nature, words such as tree and animal were used to describe the term 'natural' while concrete and pollution were associated with 'unnatural'. Further, despite the majority of participants perceiving themselves to be a part of nature in the study, what constituted a natural environment on the whole consisted of a landscape or feature untouched by humanity's influence (Vining, Merrick & Price, 2008). A study by Mausner (1996) echoed these findings and additionally added five subcategories of what constituted natural environments for the participants. These included totally natural (pristine nature with no human influence), civilised nature (natural spaces with minimal human impact e.g. a hiking trail in woodland), quasi-nature (managed natural spaces such as parkland), semi-nature (natural features co-existing with non-natural features) and un-natural (urban environments). There are doubts as to the generalisability of such conceptualisations to all members of western society of what constitutes 'natural' (Williams, 2002) but such conceptualisations do exist.

When attempting to define nature, the two contrasting viewpoints of anthropocentrism and biocentrism are often used. Anthropocentrism places humanity and its creations within nature but advocates humanity as superior over the rest of nature. Biocentrism on the other hand sees all life as having an equal value, while placing humanity and its creations outside of nature so that other species and landscapes can flourish without any direct human influence of any kind (Lamb, 1996). What both perspectives (unwittingly) do is to separate humanity from nature; either as a dominant, superior force or as a harmful, non-natural entity to be kept away from nature. It is thought that this separation makes it easier to evaluate what is natural and what is not as a separate other is more easily defined (Mausner, 1996). However defining nature may be the problem in the first place as it separates nature from culture which can be defined as the "shared patterns of behaviours and interactions, cognitive constructs, and affective understanding that are learned through a process of socialization. These shared patterns identify the members of a culture group while also distinguishing those of another group" (CARLA, 2014, p.1). The disconnect between nature and culture is a construct imposed upon the world by the western viewpoint, whereas for some indigenous cultures such as

the Gimi from Papua New Guinea, nature is part of their cultural identity so a disconnection or separation is nonsensical (Russell et al., 2013). While the western viewpoint places nature and culture as differing concepts, the two constructs are intertwined and should be brought together so that it can be recognised that nature can be seen as pure culture and culture as pure nature (Lamb, 1996).

No one definition of nature exists that is universally accepted (Lamb, 1996; Vining, et al., 2008) rather, nature is a cultural conceptualisation that in turn influences culture. The cultural perspective of what constitutes nature in indigenous peoples differs greatly from the westernised dictionary definition mentioned earlier. While each indigenous culture will differ, they can be surmised as conceptualising nature as something to which they belong, where a sense of place is important and is one that gives life and meaning; a conceptualisation that is at odds with typically western notions of nature (Johnson & Murton, 2007). While this thesis is written by an author from a westernised society who has conducted research with participants from broadly the same cultural background, the definition and conceptualisation offered at the beginning of this chapter will only be used when describing a westernised conception of nature. It will be argued later in the thesis that through nature connectedness, nature takes on a new cultural meaning which differs from the western notion of nature; therefore when nature is referred to in relation to a connectedness with nature an alternate definition will be used. Guided by the suggestion of Lamb (1996) that there should be an overlap between anthropocentric and biocentric conceptualisations when defining nature, the following definition of nature was created and will be used for the thesis: The phenomena of the physical world collectively, including plants, animals (including humanity), the landscape, and other features and products of the earth as well as celestial bodies and astrological phenomena. These collective phenomena can exist in all environments and include such phenomena even if it is shaped or managed by humanity. While humanity is considered to be part of nature as it depends on other natural entities for survival and is intrinsically linked to the natural process of a global ecosystem, the creations and artefacts of humanity that fall outside of the remit of natural phenomena are not considered to be nature.

The Human-Nature Relationship

Biophilia

The human species spread from the savannahs of Africa hundreds of thousands of years ago where the landscape offered both survival opportunities and threats to survival, leading to preferences for certain aspects of nature and aversion to others (Kahn, 2011; Wilson, 2002). While savannah like environments often receive high preference ratings, other natural environments such as coastal areas or inland bodies of water are also rated as preferred natural spaces (Hinds & Sparks, 2011). Humanity evolved to make sense of the natural world to which we belong; whether through hunting or farming, our cognitive processes and emotional states have been shaped through our interactions with nature (Gullone, 2000). It has been argued that humanity has an innate tendency to have an affiliation for nature, natural life or life-like processes, surmised as the Biophilia Hypothesis (Gullone, 2000; Kahn, 1997; Kellert & Wilson, 1993). Having an affiliation for life is theorised to stem from an evolutionary history spent searching for survival enhancing settings (Frumkin, 2001; Kellert & Wilson, 1993; Windhager, Atzwanger, Bookstein & Schaefer, 2010) with the awe and wonder such settings provide partly responsible for the love felt towards survival enhancing nature (Perkins, 2010). As urban living has occurred relatively recently in humanity's evolutionary history, the embedded learning rules derived from nature are unlikely to have been erased from our biology completely (Nisbet, Zelenski & Murphy, 2011). Biophilia has been framed as comprising of nine succinct values (see table 2.1) that cover a range of ways in which individuals relate to or interact with nature (Kellert, 1993) and are often unconsciously manifested in cognitions, emotive responses, artistry and ethics (Kahn, 1997; 2011).

Table 2.1: The Nine Values of Biophilia (Kellert & Wilson, 1993)

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Each of the nine values may cross over into one another on a surface level but they are considered to be separate values with each focussed on its own particular area (Kellert & Wilson, 1993). It is claimed that engaging with nature through the nine values leads to an appreciation for diversity and subsequent flourishing of the individual (Kellert, 1997 as cited by Nisbet, Zelenski & Murphy, 2008). It is suggested an active participation through one or more of the biophilic values allows for an innate learning of nature (Gullone, 2000); thus biophilia is a predisposition for certain natural settings driven by a hardwired biological process (Wilson, 2002). As a result, biophilia is suggested to be a biocultural model that occurs through inherited prepared learning (Wilson, 2002) that has been maintained through reliance on and affiliation towards nature, leading to greater survival and evolutionary fitness (Wilson, 1993); biophilia may therefore be crucial to optimum human functioning both affectively and psychologically (Kellert, 1997, as cited in Nisbet, et al., 2011). Tentative evidence exists for innate biophilia, as children between the ages of eight and eleven are more likely to prefer savannah like landscapes, with older children

preferring savannah landscapes and their home environment equally (see Wilson, 2002). It has been noted that the transmission of biophilic tendencies through genetic heritability is questionable and is far more likely a result of experiential learning (Simaika & Samways, 2010). Therefore the expression of biophilic tendencies may be optimised through a combination of learning, culture and direct experiences with nature (Hinds & Sparks, 2011). Empirical support for the hypothesis has been mixed (Khan, 1997) with the evidence supporting the hypothesis drawn from studies into restoration and preferences for nature. Natural scenes and plant life contain the properties required for mental restoration (Kaplan, 1995) and recovery from stress (Wilson, 2002). After surgery, recovery was quicker with patients given natural views compared to urban brick walls (Ulrich, 1984). Physical and mental health aside, humans have an intrinsic interest in both known and unknown nature; dinosaurs continue to fascinate and inspire, acting as an icon of lost biodiversity (Wilson, 2002) while zoos have larger annual attendances compared to all the major sports events combined in the United States of America (Kellert & Wilson, 1993). Such factors along with the time invested in pet keeping (Kahn, 2011) and the popularity of wilderness activities point to an advantage and desire to affiliate with nature through biophilia (Nisbet, et al., 2011).

Unfortunately the majority of research supporting the hypothesis does not test the rubrics of biophilia directly, with the hypothesis difficult to test scientifically as the theory's ambiguous nature makes it difficult to refute (Kahn, 1999). This has led to the rise of counter theories that aim to be more amenable to empirical testing. One such theory is Topophilia, which focuses on a psycho-evolutionary emotional bond to the natural environment that is based on a cultural, rather than genetic transferral of natural information essential to survival; that explains humanity's attachment to particular natural environments (Samson, 2012). Instead of biophilia being perceived as a testable hypothesis, it should instead be utilised as a framework for scientific investigation (Kahn, 1999; 2011), given that biophilia has been a useful catalyst for research into the human-nature relationship (Hartig et al., 2011). The Biophilia Hypothesis describes why humanity has a desire to affiliate with nature as a result of our evolution as a part of nature. Unfortunately, on the whole the populace of westernised, industrial societies no longer perceive themselves to be a part of nature (Vining, 2003) as a disconnection from the natural world of which humanity is a part, has occurred. As a consequence, biophilia describes humanity's relationship with nature from the perspective of where we, as a

species, came from rather than the current feeling and perception of humanity currently experienced (largely) in westernised societies. How this separation has occurred and nature connectedness as a possible counter to this separation is discussed in the following sections.

Anthropocentrism and the Separation from Nature

The human-nature relationship is guided by perceptions of self and how at both a species and a personal level, humanity fits into the wider natural environment (Cristancho & Vining, 2004). It has been argued that nature is a social construction, formed from humanity's use of and appropriation of natural resources (Eder, 1996) or through symbolic interactions comprised of thoughts and beliefs gleaned from the physical environment (Elo, Saarnio & Isola, 2010). Interactions with the physical environment lead to nature becoming an essential component of culture (Beery, 2013; Flikke, 2014). The cultural meaning that nature possesses in turn leads to culture being comprised of nature (Lamb, 1996). The perception of a divide between humanity and nature is not new, having been present in western Christian religious teachings where the sole use for all animals and the Earth itself was for human benefit (Thomas, 1983). The currently held anthropocentric view (that humanity is separate from nature) is still predominantly held in western, industrialised societies (Maller et al., 2009; Vining, et al., 2008). This human exemptionalism perceives humanity as distinct from nature due to the possession of culture, making any distinction between humanity and nature a result of social rather than biological factors (Catton & Dunlap, 1978). This cultural perception gained popularity as a result of the scientific revolution that took place from the 16th century (Bourdeau, 2003; Merchant, 2006; Vining, 2003). As a result, the anthropocentric viewpoint quickly became part of the prevailing western thought through a process of unconscious socialisation (Merchant, 2006). This is evidenced by anthropocentric metaphors that began to gain popularity then and that continue through to today where nature is viewed as a resource or capital to be exploited (Antal & Drews, 2014). The separation of humanity and nature may be at the heart of the environmental issues currently facing humanity (Flikke, 2014) and therefore needs to be examined before possible solutions can be created.

Monotheistic Religion and the Superiority of Man

Devotional religions such as Islam, Judaism and Christianity have an anthropocentric ethos (Scofield & Margulis, 2012) with early Christianity in the west focussing away from a physical environment perceived to be fallen and containing original sin, in favour of otherworldly concerns (Vining, 2003). Writers of religious texts understandably included little in their writings on how to treat wider nature as they did not know the value or concept of ecology (Wilson, 2002). Generally, the idea of a sustaining environment is ignored in favour of exploitation as the focus advocated by such belief systems is on the afterlife with little concern for future sustainability (Scofield & Margulis, 2012). For fundamental Christian believers, climate change as a result of an imperfect world is something to be embraced as it contributes to divine judgement and the restoration of humanity and the Earth (Dunn, 2013), through the ultimate destruction of the world in which we live; in much the same way as a nuclear war would (Macy, 2007). This also derives from monotheistic religious doctrine advocating the superiority of humanity (Merchant, 2006; Scofield & Margulis, 2012; Thomas, 1983), as (especially) man, is made in the image of a higher being's divine will and therefore other species are subordinate to humanity (Vining, 2003).

While early and fundamental religious doctrine advocate dominance, recent monotheistic thinking places humanity in a stewardship role (Bordeau, 2004) yet the notion that a love for nature detracts from a love for God is still present, stemming in part from the ideas of Plato (Bordeau, 2004). Plato advocated that certain aspects of the universe are ideal (in this case God) with other aspects not ideal (nature) and it is these ideal aspects that explain the structure of the universe and our reality (Bateson, 2002). Today, science and monotheistic religion are often at odds with one another but this was not always the case. During the scientific revolution the experimental scientific method was perceived to bring 'glory to God' and so was embraced, leading to both reductionist science and devotional religion to criticise naturalistic philosophy and a holistic world view (Scofield & Margulis, 2012). Not all religious beliefs adhere to such rhetoric, as Hinduism, Taoism and Buddhism advocate interconnectedness and harmonious living with nature, as humanity is no more divine or important (Bordeau, 2004; Scofield & Margulis, 2012). This concept was echoed at the Assisi declarations for the Islamic faith, whereby a unity between God, humanity and nature was a central tenant where an existence based on harmony was advocated (ARC, 2015). In addition, important religious figures in Christianity and Judaism have spoken of the need from a religious context, for

pro-environmental behaviours to be enacted by believers of their respective faiths as not doing so amounts to sinful behaviour (Wilson, 2002). Most recently Pope Francis called for Catholics and world leaders to do more to protect the environment and tackle climate change (Roberts, 2015). It would be unfair to suggest that monotheistic religions are the only advocates of the superiority of man over nature. The western philosophical tradition has utilised a hierarchical approach whereby femaleness has been aligned with emotion and nature, which have a negative cultural value when compared to maleness; which is conceptualised as human and rational (Plumwood, 1990; 1993). The separation of male, female, and nature through the use of a gendered hierarchy by the western philosophical tradition, has placed rational maleness above an emotional female nature which in turn has further perpetuated the distinctiveness of humanity as the sole rational species, and so superior to wider nature; resulting in the biosphere being harmed through destructive practices by a male dominated species (Plumwood, 1993). Ecofeminism is a direct critique of this maleness model of humanity and rationality, by linking nature and femaleness with positive cultural values and eliminating the gender hierarchy that has harmed both women and nature; making ecofeminism a reevaluation of traditional western, cultural thinking (Plumwood, 1993). To do this, ecofeminism draws upon ecological, socialist, and feminist principles to oppose the ideology of a dualism of nature and culture that oppresses other humans based on aspects such as gender, race, or sexuality; one which in turn oppresses nature in much the same way (Gaard, 2010).

Reductionist Science and the Domination of Nature

Modern anthropocentric views stem from a cartesian ideology of the human right to dominate and control nature, and a separation occurring due to scientific and technological progress (Franklin, as cited in Vining, 2003; Merchant, 2006) During the scientific revolution, Francis Bacon was a key instigator, with the methods used by Bacon focussing on extracting the facts of how nature functions in order to subdue and dominate the natural environment (Bordeau, 2003; Merchant, 2006; Thomas, 1983). The reductionist scientific method was born from classical Greek philosophy from the works of Plato and Aristotle (Bordeau, 2004; Vining, 2003) with humanity separate from the rest of nature due to our species' intelligence and rational thinking (Vining, 2003). The method focuses on minute and quantifiable conclusions (Scofield & Margulis, 2012) where the simplest explanation of the data is sought (Bateson, 2002). While the method promotes an objective approach, it can miss the dynamic and complex interactions and

connections present in natural systems (Scofield & Margulis, 2012). This is due to the method potentially overlooking alternate explanations rather than addressing the wider context or whole (Bateson, 2002); leading to the degradation of one natural environment in favour of protecting other aspects of nature that are useful to humanity (Scofield & Margulis, 2012).

Reductionist methods remain popular however, with humanity (or more accurately, man) treated as unique compared to the living universe which is generalised instead. This phenomenology is flawed however as much of the knowledge that is considered 'real' is insecure, relying on perception; a phenomena that is unreliable and personally biased (Bateson, 2002). This anthropocentric point of view leads to dismissive environmental practices that degrade the biosphere as well as the health and wellbeing of humanity (Scofield & Margulis, 2012). Such actions separate humanity from nature, leading to purely natural environments being perceived as being devoid of any human contact or influence (Vining & Price, 2008). Therefore the reductionist scientific method leads to a separation of humanity from nature that results in the destruction of natural environments, which lead to a cycle of further separation and resulting destruction (Kahn & Hasbach, 2012). It would be unfair to tarnish all scientific disciplines with the same brush, as astronomy and biology (through ecology) may have led in some part, to an altering of purely anthropocentric views in favour of the realisation that humanity is part of a wider biological process (Thomas, 1983; Vining, 2003). This wider biological process occurs as a result of all living things (humanity included) being enactive with one another; in this way the self and environment are connected (Thompson, 2007). This shift away from objectification and categorisation in favour of constructing reality through relational encounters or events (McPhie & Clarke, 2015) is crucial to an extended mind as internal cognitions are driven and influenced by the external environment that implies an extended self (Clark & Chalmers, 1998). It is this epistemology that the reductionist method must utilise in order to fully understand the universe in which we as humanity are a part; one that draws upon the lived experience with data understood within a wider gestalt (Bateson, 2002).

Humanity as Part of Nature through Biocentrism

The perception that humanity and nature are separate is nonsensical, akin to describing an individual's relationship to its own species (Kahn & Hasbach, 2012).

Instead, nature can be perceived as being inclusive of the individual, with nature having a system of balanced organisation, similar to a gestalt (Schroeder, 2007). Interactions with the natural environment will be perceived positively or negatively depending on the predominant perspective, with a biocentric ethos generally considered to be positive for nature as it overrides the anthropocentric view of human superiority that may lead to harm (Munoz et al., 2009; Schroeder, 2007). Paradoxically however, it has been found that an anthropocentric ethos can still be held by individuals who still see themselves as part of nature (Vining, 2003). This may stem from the varied reactions that nature elicits ranging from a connection of love for a natural environment, disgust or fear (Schmuck & Schultz, 2001) and even complete ambivalence and boredom (Schroeder, 2007). Such diverse reactions may indicate different ways in which humanity as a species reacts and interacts with the natural world that may result from humanity's evolutionary history (Joye & van den Berg, 2011; Kellert & Wilson, 1993; Khan, 1997), learnt experiences (Simaika & Samways, 2010) as well as cultural factors and individual idiosyncrasies (Grinde & Patil, 2009). It would appear that biocentrism could have a positive effect on wider nature and in turn humanity given its opposition to exploitation. Unfortunately, a biocentric perspective implies separation, as humanity should allow other species and environments to flourish without any direct human influence. So while on the surface, biocentrism would appear to lead to a positive relationship with wider nature and be a counter to the prevailing anthropocentric view, it may have inadvertently contributed to the possible harm of nature by reinforcing the notion of humanity being separate from nature.

The Current State of Nature

It is important to stop and recognise the harm caused to wider nature as a result of the prevailing view that humanity and nature are separate before nature connectedness, the counter to this perceived separation which is proposed by this thesis, is discussed. In doing so, the reason why a change in the prevailing western viewpoint is required can be made clear; one that contributes to the overall rationale of this thesis. The current state of nature is divided into two broad components; climate change and loss of species; however it is acknowledged that the two are intrinsically linked and have only been separated to provide clarity in the overview below.

Climate Change and Sustainability

Humanity has become a geophysical force in nature and through our actions have seen carbon dioxide levels reach their highest ever levels in over 200,000 years; an increase that will ultimately have a negative impact on the planet through climate change (Wilson, 2002). Climate change poses a huge risk to all human societies (Sundblad, Biel & Garling, 2007) as the increased frequency of heat-waves, droughts, floods and forest fires (Wilson, 2002) has led to the loss of the certainty that future generations will exist (Macy, 2007). Human behaviours are the main cause of climate change and other environmental issues (Davis, Le & Coy, 2011; Wilson, 2002) so in order to reduce the impact brought on by climate change, a significant reduction in greenhouse gas emissions (Carrico & Reimer, 2011) and sustainable resource management (Castro, Garrido, Reis & Menezes, 2009) is necessary. This has led to environmental sustainability becoming arguably the most pressing issue of the 21st century (APA, 2013; Mayer & Frantz, 2004). Protecting the environment is therefore vitally important as ultimately any negative effect due to the harm caused to nature will still be felt by humanity (Schultz & Zelezny, 1999). In order to remedy these pressing issues, the period of 2005-2014 was declared the decade of sustainable development education by the United Nations (Aruthnott, 2008). This approach by the United Nations stems from research that often focusses on environmental education as a key factor in initiating behavioural changes (Dobson, 2007; Jacobson, Carlton, Devitt, 2012; Kollmus & Ageyman, 2002). However, despite a wide awareness of the environmental issues caused by human action, irresponsible environmental behaviours still continue (Berenguer, 2007; Mayer & Frantz, 2004); suggesting that efforts to change behaviour through environmental education that use mechanistic, rather than interpersonal and experiential frames may have been misplaced (Antal & Drews, 2014). A lack of appreciation or willingness to invest and engage with pro-environmental efforts may result from environmental generational amnesia as each generation has a conception of the natural environment based on lived experience; environmental damage leads to greater degradation and the changes to the environment are accepted as 'normal' by the subsequent generation (Kahn, 2011). There is tentative evidence that generational shifts do exist within adult populations as relationships with the natural landscape frequently become weaker as urbanisation grows (Beery, 2013). The lack of uptake in pro-environmental action makes addressing generational amnesia the central psychological problem currently facing humanity (Kahn, 2011).

The Loss of Biodiversity

Biodiversity loss occurs as a result of climate change (Steg & Vlek, 2009), conflict with humanity, and deforestation (WWF, 2010). The development of land is leading to an ever increasing loss of biodiversity and habitat (Regnery, Couvet & Kerbirou, 2013) with a wide awareness that human activity can have a negative impact on ecosystems and the species they contain (Schuldt et al., 2013). The cost to all of nature as a result of biodiversity loss will be great as the diversity and richness of species will be depleted from which the Earth may never fully recover. As the loss of biodiversity increases, humanity is also impacted, as future generations will suffer as a result (Wilson, 2002) as aspects of wider nature are lost that we may not have realised even existed (Sewell, 1995). Getting both the individual and larger corporations to act in order to protect endangered nature through conservation is important, but the amount of time and effort willingly invested varies greatly (Castro, Garrido, Reis & Menezes, 2009). The practice of nature conservation that was developed only in the 20th century, was initially motivated by game keeping for hunting, but has now evolved into the practice of conserving species and particular genetic variations (Flikke, 2014). There is a need for all individuals (as well as policy makers) to be involved in conservation efforts (Cheng-Hsuan & Monroe, 2010) especially in the establishment of protected areas of land (Liu, Ouyang & Miao, 2010).

The Pressing Need for Change

Science, technology and a lack of understanding have led to the climate and biodiversity issues of today (Wilson, 2002) that cannot be solved by technological innovation alone (Bordeau, 2004). The stark warning by E. O. Wilson (2002) summarises why a widespread change is necessary: “when we destroy ecosystems and extinguish species, we degrade the greatest heritage this planet has to offer and thereby threaten our own existence” (p.39). This is echoed by the thoughts of Nisbet et al., (2011) who assert that a loss of biodiversity and degradation of the environment will lead “not only to an unhealthy environment, but to unhealthy and unhappy humans as well” (p.305). Educators and scientists alike are increasingly recognising that humanity’s survival is dependent on living harmoniously with nature (Gray & Birrell, 2015). The need for positive behavioural change is clear and while governments and industry need to take action, there is also the need for action at the individual level in limiting environmental harm (Arbuthnott et al., 2014).

The current trend of conservation as development that emphasises humanity as a part of nature (ergo any conservation efforts benefit both wider nature and humanity), represents a cultural shift (Flikke, 2014) that may facilitate greater behavioural change. However, any further societal-wide change in behaviour may only occur when a concern for the environment becomes part of the self in order to elicit environmentally consistent behaviours (Verplanken et al., 2008). This would emerge from a shared human worldview (APA, 2013; Hedlund-de Witt, 2012; Wilson, 2002) and cultural perspective (Ernst & Thiemer, 2011). Such an ideological change will involve appreciating life quality instead of quantity (Naess, 1986) to allow human beings to live sustainably with nature where diversity is valued (Light, 2000) thus allowing all life to flourish (Drengson & Devall, 2010). Humanity has the capacity and responsibility to think about and protect the planet but a relationship with nature is needed as the main requirement of a much needed environmental ethic (Wilson, 2002). Research attention has begun to turn towards the human-nature relationship (Perkins, 2010) as a route to limiting environmental damage (Tam, 2013). This is due to the acknowledgment that information and awareness is not enough to produce environmentally responsible behaviours (Arbuthnott et al., 2014). Ultimately, the pressing need for change is not about saving the world rather it is about saving humanity from harm of its own making and to avoid the ultimate loss of other species, which form an important part of humanity's culture and identity.

Nature Connectedness

The shift in focus towards reconnecting humanity with nature within westernised societies, in order to counter anthropocentric harm to wider nature (Tam, 2013) is a modernist issue but rather than forming a relationship with another entity, it is instead the realisation that such a relationship already exists (McPhie & Clarke, 2015). This makes the often used term of connection with nature a *sous rature* as the term still implies some form of separation, yet while the term is inadequate it is a necessary concept if it implies that humanity is of the natural world rather than in it (McPhie & Clarke, 2015). The following section provides a definition of nature connectedness, one that is intended to describe a pre-existing relationship with nature where all entities are intrinsically valued and part of the same natural world; before examining the components, benefits and potential pathways that lead to nature connectedness.

A definition of Nature Connectedness

While a number of terms have been used within the literature to describe the notion of a positive, human relationship with nature, the predominant term is that of connectedness with nature. Nature connectedness is therefore a multi-dimensional construct and is comprised of a number of factors. For the purposes of the thesis, the following working definition of nature connectedness will be used based upon the research presented within this section:

Nature connectedness is the sensation that an individual is part of a larger natural community (Leopold, 1966; Mayer, Frantz, Bruehlman-Senecal & Dolliver, 2009) leading to nature and the self becoming one (Schulz, 2001) through personal and social influences as part of an environmental identity (Clayton, 2003; 2012). This connection is comprised of cognitive (Schultz, 2001), affective (Mayer & Frantz, 2004), learnt, experiential (Nisbet, et al., 2009) and personality (Kals, Schumacher & Montada, 1999) factors that together create an individual, subjective relationship with nature.

Evolutionary Basis for Nature Connectedness

From an evolutionary perspective, humanity has been portrayed as a selfish and aggressive species that requires social controls in order to manage behaviour. While this perspective is advocated by the Hobbesian Evolutionary Psychological viewpoint, one which normalises predominant behavioural trends in westernised societies as adaptive, it is far removed from the companionship culture our ancestors and those living a small band hunter-gatherer lifestyle experience and live today (Navarez, 2013). Humanity is instead a social species, one which places an importance upon social connectedness with others as a direct result of our biology and evolutionary history (Cacioppo & Patrick, 2008). It was essential for our ancestors that a psychological connection with other group members was formed, a connection that was based upon similarity (Lakin, Jefferis, Cheng & Chartrand, 2003). It is theorised that humanity's capacity for co-operation emerged from this similarity and our emotional bonds with others, which in turn produced compassionate helping which could off-set any destructive tendencies humanity possesses (Gilbert, 2014). The need to form social connections with others was (and continues to be) important for our health and genetic legacy; something that could be threatened by social isolation. In modern western societies, social isolation has been found to have a negative effect on cognitive functioning which can be alleviated through connecting with

other human beings and non-human life such as pets (Caccioppo & Hawkley, 2009), or through the restorative effect of viewing nature (Kaplan, 1995). Re-connecting with nature may have an evolutionary basis in humanity's need and predisposition to form connected relationships with others, both human and non-human life. The ability to connect not only with other members of the human species but with wider nature also is an important one for modern small band hunter-gatherer communities; where an egalitarian social structure, the sharing of resources, knowledge, and company is prevalent, and a partnership and embeddedness within the wider natural world is lived and practiced (Navarez, 2013). Therefore the factors which comprise nature connection discussed in the remainder of this section may be underpinned by humanity's predisposition to form social and psychological connections with others and the wider natural community through emotional bonds, cognitions, and lived experiences.

Nature as a Concept of Self

The prevailing view held by modern, westernised societies that humanity is set apart from (Vining, et al., 2008) and even above nature (Maller, et al., 2009) was outlined as being one of the principle causes of environmentally harmful behaviour (Haila, 1999). The value placed on self, animals and wider nature are therefore crucial to the attitudes held on environmental issues (Schultz, 2001) as well as behaviour (Verplanken, Walker, Davis & Jurasek, 2008). In order for this to be achieved, an expansion of an individual's concept of self to include nature is necessary in becoming connected to nature (Mayer & Frantz, 2004; Schultz, 2001). It is thought that extending the self-concept to include nature creates a feeling of kinship (Olivos, Aragonés & Amerigo, 2011) and commonality with all life (Fox, 1990) as nature and the self are perceived as one and the same (Light, 2000). Connectedness to nature therefore creates a sense of belonging to the wider natural world as part of a larger community of nature (Mayer, et al., 2009). The need for a connection to nature is a western notion and for indigenous cultures such as the Inuit, the natural landscape forms a crucial part of their cultural identity (Russell et al., 2013). Therefore extending the self to include nature is not a new concept, as traditional indigenous belief systems often see the Earth and self as one and the same, with an individual's identity entwined with the fate of the wider environment (Macy, 2007). Since medieval times, the concept of 'Friluftsliv', a lifestyle of joy, freedom and experience leading to a spiritual connectedness with nature has existed in Sweden and continues to

influence lifestyle and education to this day (Beery, 2013); suggesting an active engagement with nature is important as it informs an eco-identity (Russell et al., 2013).

Anthropomorphising nature may also be important for including nature within the self-concept as it is the “cognitive mechanism” for developing a biocentric ethos (Kahn, 1999; Vining, 2003) as natural elements are humanised, leading to feelings of similarity and empathy (Tam, Lee & Chao, 2013). Possessing a nature self-concept leads to humanity and nature being perceived to be bound by the same natural laws with all life having value (Nisbet & Zelenski, 2013; Schultz, Shriver, Tabanico & Khazian, 2004). This view point is in essence biocentric (Munoz et al., 2009; Schroeder, 2007; Schultz, 2001; Vining, et al., 2008), albeit where nature and humanity co-exist and are not separated; where the selfish benefit to humanity is foresworn in order to preserve biodiversity, regardless of whether nature possesses utilitarian properties or not (Barbier, et al., 2011; Naess, 1986). Therefore everything in nature has a cultural, biological and individualistic value (Bordeau, 2004; Drengson & Devall, 2010). Possession of this view point (and therefore a connectedness to nature) should lead to an appreciation of the richness of life and the flourishing of humanity (Naess, 1986) as harming nature when it is part of the self-concept is akin to harming oneself (Frantz, Mayer, Norton & Rock, 2005; Mayer & Frantz, 2004; Muller, Kals & Pansa, 2009; Roszak, 1995). Despite this, a sense of self and nature as one and the same is not always consistently held, as it may fluctuate depending on circumstance, being comprised of an experience of nature at the individual, community, and social group level (Russell et al., 2013). While the nature-self concept may not always be consistently held, it is still important for humanity living in balance with wider nature (Wilson, 2002).

Emotional Affiliation with Nature

Individuals living in close proximity with nature tend to report feelings of inner calm and happiness while gardens, beaches, parks and rivers elicit self-reported sensations of fun and relaxation (Hinds & Sparks, 2011). While the emotional response to nature can be either positive, negative or a mixture of the two, there is some evidence that the positive emotional response to nature is widespread (Hinds & Sparks). As a result, a personal, affective connection to nature has been espoused for its importance (Davis, Green & Reed, 2009) as an emotional attachment to nature may be crucial to the formation of connectedness and feeling part of the natural world (Mayer & Frantz, 2004).

Possession of a personal relationship with nature may lead to environmentally protective behaviours as a personal connection utilises the affective connection in eliciting pro-environmental attitudes to local nature (Nisbet, et al., 2009). This affective connection or emotional affiliation towards nature is comprised of four aspects of natural affection; love, freedom, security and being part of nature (Muller et al., 2009).

Becoming emotionally affiliated with nature is thought to occur through positive interactions during childhood (Hinds & Sparks, 2008; Muller et al., 2009) where the memory of the connecting experience becomes imprinted upon the individual (Hawkes & Alcott, 2013). While an emotive attachment to nature comprises (in part) a connection to nature, being connected goes beyond a love for nature (Frantz, et al., 2005). An emotional affiliation to nature leads to nature connectedness that goes beyond a surface love for pleasing nature through an understanding of the interconnectedness and value of natural life (Nisbet et al., 2009) that is similar to the concept of deep ecology (see Naess, 1986). The emotional attachment to nature formed through childhood engagement with nature endures in the form of a trait which contributes to a desire to have contact with nature in adulthood (Muller et al., 2009) and while contact may not always be possible due to restrictions on opportunity, the desire to have contact is ever present.

Personality Factors

Human behaviour at both the individual and societal level has a direct effect on the ecological health of the Earth with a variety of psychological factors informing behaviour toward the environment (Hirsh, 2014). The personality traits of openness and agreeableness from the five trait model have been linked with environmental concern at the individual level (Hirsh, 2010; Hirsh & Dolderman, 2007; Richardson & Sheffield, 2015; Tam, 2012). The same link has been shown at the societal level across 51 countries, which may result from shared cultural values and through the chance transmission of inherited genes via genetic drift (Hirsh, 2014). Agreeable individuals show greater empathy and compassion while open individuals have stronger aesthetic interests and greater cognitive flexibility (Hirsh, 2014). Most recently openness, when coupled with reflective attention, has been found to have a strong, positive relationship to nature connectedness (Richardson & Sheffield). It is suggested that these personality traits influence the extent to which nature is seen as part of the self (Hirsh, 2014; Hirsh & Dolderman, 2007). This is supported by the finding that Nature Relatedness, a trait like

construct that is stable over time, is positively related to the personality factors of openness and agreeableness while being negatively related to neuroticism (Nisbet et al., 2009; Zelenski & Nisbet, 2012). This may be due to agreeable individuals having a greater ability to be empathic with an inclination to extend their social circles to create a larger community, while openness is associated with transcendence of the self (Hirsh, 2014). Further studies have also reported correlations between connectedness to nature and extraversion and conscientiousness in addition to openness and agreeableness (Zhang, Howell & Iyer, 2014). Despite there being a shared theoretical overlap between all the measures of nature connectedness (Tam, 2013), there is some evidence that the concept of Nature Relatedness is a separate construct from nature connectedness, with the personality construct not providing the same benefits to wellbeing as nature connectedness has in other research (Zelenski & Nisbet, 2012). Despite this, nature connectedness, whether it is specifically termed connectedness with nature (Mayer & Frantz, 2004) or emotional affinity for nature (Kals, et al., 1999) has been suggested to be a personality trait in its own right formed in part by positive experiences in childhood. While childhood experiences are important for trait-like nature connection, a connectedness with nature is not fixed but malleable, given that it can be increased through contact with nature (Bruni, Winter, Schultz, Omoto & Tabanico, 2015).

The Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, Openness to Experience (HEXACO) model of personality has some overlap with the big five model through the traits of agreeableness (through honesty-humility) and openness to experience (Lee, Ashton, Choi & Zachariasson, 2015). While the trait of openness to experience is almost identical for both the big five and the HEXACO models, honesty-humility has no direct comparison. This trait is manifested in the tendency to cooperate with another rather than exploiting them even if there is an opportunity to do so. In a study of 324 undergraduate students both openness to experience and honesty-humility were the main correlates of the connection to nature scale with nature connectedness mediating the relationship between honesty-humility and pro-environmental attitudes (Lee et al., 2015). Personality traits such as openness to experience, agreeableness and honesty-humility are all considered to be positive personality traits that create a relationship with another through the blurring of boundaries or through cooperation without exploitation. It is unsurprising that all three have been linked to nature connectedness which, as mentioned previously, is a trait-like but

malleable construct; given that forming an emotional relationship with nature while feeling part of a wider natural community would not be compatible with exploitation of or a sense of separateness from nature.

Place Attachment

While nature connectedness and place attachment can be thought of as different constructs, a connectedness to nature contributes to a sense of place while an attachment to place may contribute to an emotional and cognitive connection with nature (Russell et al., 2013). Place attachment is the bonding between an individual and environment that has meaning for the individual concerned (Scannell & Gifford, 2010a), formed through memory of a place, that in turn creates a link to the ecosystem that can change as both personal identity and the ecosystem alter (Russell et al., 2013). An attachment to place has three dimensions; the person (based on culture and individual experience), the psychological process (behaviours, emotion and cognition) and the place (the physical environment and the social setting). Place attachment may have arisen from the survival opportunities a bond with the immediate environment provided, including resources and knowledge of the landscape (Scannell & Gifford, 2010a) which is similar to the Topophilia hypothesis proposed by Samson (2012). An attachment to place is not dependent upon knowledge of the ecosystem however (Russell et al., 2013) with it being activated through environments reminiscent of those engaged with in childhood; those that hold symbolic connotations in the social group or through meaningful physical characteristics of the place (Scannell & Gifford, 2010b). While place attachment has been linked to feelings of safety and engagement with greenspace, a positive attachment to natural spaces will not be universal for all as proximity to a natural space can elicit negative as well as positive responses to nature (Russell et al., 2013). It is also unclear whether certain built environments produce place attachment that benefits the individual in the same manner as an attachment to a natural environment. This is due in part to little empirical work to investigate this to date (Russell et al., 2013) however, place attachment to natural rather than urban environments has been linked to the uptake of pro-environmental behaviour (Russell, 2013; Scannell & Gifford, 2010b).

The Benefits of Connecting with Nature

Ever increasing numbers of people are having less contact with nature; the general health implications of which are as of yet, unknown (Maller et al., 2009). While the potential negative impact upon health and wellbeing are not fully known, there is a growing evidence base for the physical and mental wellbeing benefits of engaging with nature. Given that nature connectedness predicts an individual engaging with nature (Nisbet & Zelenski, 2013), the following subsections discuss the links between connectedness and engagement with nature that in turn lead to physical and mental wellbeing benefits.

Mental Wellbeing

As defined in chapter one, wellbeing is a subjective state where an individual's basic needs are met, where a positive mood is prevalent and where purpose and meaning in life are present (Stevens, 2013). Nature has long been associated with positive outcomes for humanity; historically, anecdotally and in more recent empirical work on wellbeing (Russell et al., 2013). In addition, re-connecting with nature may not only lead to further contact with nature, but could also lead to an increase in wellbeing also. Nature connectedness is associated with overall benefits to wellbeing with an effect size similar to the established factors of income and education in social psychology (Capaldi et al., 2014). Research has found that nature connectedness is positively related to satisfaction with life (Mayer & Frantz, 2004; Russell et al., 2013), happiness (Zelenski & Nisbet, 2012), perspective taking (Russell et al., 2013) as well as social and psychological wellbeing (Howell, Dopko, Passmore & Buro, 2011). Another indicator of nature connectedness, the Nature Relatedness scale has been shown to be positively related to personal growth, vitality, meaning in life and satisfaction with life, with links to the long term maintenance of vitality (Nisbet et al., 2011). Higher levels of Nature Relatedness have also been linked to decreases in trait and state anxiety (Martyn & Brymer, 2014) although individuals tend to underestimate the benefit to their own wellbeing, even brief exposure to nature can have positive benefits through Nature Relatedness (McMahon & Estes, 2015; Nisbet & Zelenski, 2011). In a recent review of nature connectedness and happiness, the Inclusion of Nature in Self scale (Schultz, 2001) had the strongest

association with this particular facet of wellbeing, while the Connectedness to Nature Scale (Mayer & Frantz, 2004) and the Nature Relatedness scale (Nisbet et al., 2009) showed an equally positive association (Capaldi et al., 2014). An Affiliation to Nature, another indicator of a connected relationship to nature, is related to increased levels of overall wellbeing with rooms that contain plants suggested to facilitate feelings of closeness and community with nature (Passmore, 2011). It is thought this occurs when the individual draws on previous positive interactions with plants and natural landscapes in childhood (Hawkes & Alcott, 2013; Muller et al., 2009).

In the prelude to this subsection it was stated that a connection with nature predicts an engagement with nature (Nisbet & Zelenski, 2013); therefore the remainder of this short overview will also cover the wellbeing improvements derived from contact with nature that could result from nature connectedness. Improvements to cognition and mood can be gained through contact with nature (Capaldi et al., 2014) that has been found in individuals residing in urban environments after spending time in nature (Russell et al., 2013). Natural landscapes consistently demonstrate a positive effect on mental health, with outdoor natural environments having stronger wellbeing benefits than indoor nature (Grinde & Patil, 2009). Simply viewing nature has been associated with a reduction in stress and an increase in overall wellbeing (Russell et al., 2013) which has been explained by restoration theory. Voluntary directed attention or any prolonged mental effort can lead to mental fatigue that appears to be a contemporary problem for humanity (Kaplan, 1995). While sleep can provide some relief, a more effective remedy exists through engaging with nature, either directly or indirectly, that has been shown to provide psychological benefits through restoration following attentional fatigue or stress (Kaplan, 1995). The mechanisms that underlie the process of restoration have been theoretically explained through the Attention Restoration Theory proposed by Kaplan and Ulrich's Stress Recovery Theory (Kjellgren & Buhrlkall, 2010; Ratcliffe et al., 2013).

The Attention Restoration Theory (Kaplan, 1987) proposes that the ability for a natural environment to provide restoration is comprised of its ability to provide a sense of being away from the stressor, the extent of detail within the environment, how easily attention is captured through fascination, and how easily the individual can operate within the environment being engaged with (Kaplan, 1995; McDonald et al., 2015; Wyles, Pahl, Thomas & Thompson, 2015). The theory is well supported through research and is considered to provide the best explanation for restoration of attention and the subsequent

wellbeing benefits it creates (Russell et al., 2013). Research support for Attention Restoration Theory comes from studies that investigate exposure to (often green) natural settings being positively related to reductions in mental fatigue (Russell et al.). Garden spaces are another environment that can provide restoration regardless of whether they are designated as a built or natural scene type (Ivarsson & Hagerhall, 2008). Finding restoration through engaging with nature has been linked to better cognitive performance in proof reading tasks and increased attention post-surgery (Kaplan, 1995). In qualitative interviews, birdsong was perceived to be restorative for some of the participants with the restoration derived being diminished if a pre-existing connection with nature was not already present (Ratcliffe et al., 2013). It is not only green spaces that have a restorative effect, with coastal areas also meeting the requirements for a restorative environment, with participants reporting that coastal areas that are clean or contain natural ocean debris were preferred and were rated as both restorative and calming (Wyles et al., 2015). While the restorative benefits of engaging with nature have been repeatedly found, there is a question over whether all aspects of nature will necessarily be restorative even if they possess the qualifying conditions of Attention Restoration Theory. Cultural meanings attributed to particular bird species such as Robins or Owls can lead to birdsong either providing restoration or not being restorative, while positive and negative associations attributed to species such as feral pigeons may elicit the same differing responses (Ratcliffe et al., 2013).

The Stress Reduction Theory (Ulrich, 1983) suggests that restoration occurs through positive affective appraisals of the natural environment from visual responses, with restoration occurring as a result of humanity's evolved tendency to appraise natural environments for threats and benefits to survival (Ratcliffe et al., 2013). According to the theory, humanity has an aesthetic preference for the natural environment as visiting nature reduces stress through the positive emotions it elicits (Kjellgren & Buhrkall, 2010). As a result, the theory shares ties with the Biophilia Hypothesis (Kahn, 1997) as views of landscapes which include water features and vegetation hold attention for longer periods of time, are appraised more positively, and are thought to reduce negative effect (Ulrich, 1984). Further support is derived from physiological studies where reductions in stress, skin conductance, heart rate, and blood pressure after viewing a natural scene occurred within three minutes (Ulrich, 2002). More recently, birdsong was not only found to be perceived to be restorative to mental functioning but was also seen to possess the

properties of being intrinsically attractive while having low levels of arousal (Ratcliffe et al.). The mental restoration gained from viewing nature also benefits the individual physiologically as hospital patients post-surgery have been found to have faster recovery times when their view is of nature rather than a brick wall (Ulrich, 1984).

While the two theoretical accounts differ conceptually, an integrated model was proposed by Kaplan in 1995. The integrated framework suggests that there are two potential outcomes to any information processing demands; stress or attentional fatigue, with both remedied through the restorative benefit that nature provides; with the difference being the context of the demand and type of problem it creates. The Stress Reduction Theory therefore mitigates stress when it occurs, whereas directed attention through the process of Attention Restoration Theory enables restoration in order to prevent stress occurring in the first place (Kaplan, 1995).

In addition to providing restoration, actual natural environments have a greater overall effect on wellbeing than virtual nature (McMahon & Estes, 2015). Increased subjective wellbeing has been linked to perceptions of greater biodiversity in the natural environment (Dallimer et al., 2012) although the type of natural environment (managed or wild) has no effect on wellbeing (McMahon & Estes, 2015). Alongside this, pet ownership has been linked to decreases in stress and an increase in self-esteem (McConnell, Brown, Shoda, Stayton & Martin, 2011; Russell et al., 2013). The positive effect of engaging with nature has been formally utilised in activities that provide a therapeutic effect. The umbrella term of green care describes the use of biotic and abiotic natural elements to promote wellbeing, by linking healthcare systems with activities drawn from agriculture, animal keeping and gardening (Haubenhofner, Elings, Hassink & Hine, 2010). However, the effect of exposure to nature or indeed nature connectedness on wellbeing cannot be generalised as responses to nature can be varied which may depend upon the presence of resources within the natural environment (McMahon & Estes, 2015). The restorative properties of bird song may be linked to the associations held, positive or negative, of the bird in question (Ratcliffe, Gatersleben & Sowden, 2013). Fear of nature can be induced through contact, often as a result of human-nature conflicts that would have a negative effect on wellbeing (Russell et al.). Natural areas perceived to be overgrown can lower perceived wellbeing due to an increased anxiety resulting from feeling unsafe due to fear of crime (Tzoulas et al., 2007). Furthermore, having an interest in protecting nature without being connected to nature first has been found to hinder

increases in wellbeing due to possible pessimistic attitudes (Zelenski & Nisbet, 2012). Alongside this, the type of natural landscape may be an important factor as coastal landscapes have shown no relationship to satisfaction with life and only small gains to overall wellbeing (White, Alcock, Wheeler & Depledge, 2013); this may explain why the majority of increases to wellbeing resulting from exposure to nature have been found in green spaces (Grinde & Patil, 2009).

The benefits to wellbeing from nature have been well established (Hartig et al., 2013) and it is thought nature connectedness functions in a similar way to flourishing; leading to the individual becoming physically, spiritually and emotionally well-off (Matthews, 1991) that in turn may benefit an individual's subjective wellbeing. Additionally, the reduction in stress hormones such as cortisol may also explain to a degree, the wellbeing benefits of nature (Logan & Selhub, 2012). Differing effect sizes in meta-analyses suggest that it is an increase in positive affect rather than a decrease in negative affect that leads to wellbeing gains from nature connectedness, with even brief contact consistently shown to increase positive affect. Given that nature does, on the whole, increase positive affect, the decrease in time spent in nature due to urban living, and a growing disconnect from nature may ultimately have an impact on positive psychological functioning (McMahon & Estes, 2015). Empirically, the wellbeing benefits of exposure to nature as a result of nature connectedness still requires a systematic investigation in order to ascertain the exact mechanisms involved (Hartig et al., 2013) especially given the varied methods that have been employed to date (Russell et al., 2013). Ultimately, our conceptualisation of nature is a product of culture, and our culture is influenced by nature. This then feeds into why the wellbeing benefits of engaging with nature are found; because nature is culturally perceived to be beneficial to wellbeing (see figure 2.1), therefore individuals with this cultural view experience wellbeing benefits that then reinforce this cultural perception (Hartig, 2011).

FIGURE 2.1 REMOVED DUE TO COPYRIGHT

Figure 2.1 The Cultural Perception of Nature's beneficial effect on Wellbeing (based on Hartig et al., 2011)

Physical Health

As mentioned previously, individuals who are connected with nature are more likely to visit natural environments (Lin et al., 2014) with such environments thought to have physical health benefits (Russell et al., 2013). Areas of woodland provide immediate benefits by maintaining air quality and providing protection from elements and flooding (Hartig et al., 2011) while areas of greenspace are thought to ameliorate airborne urban pollution and increase physical activity levels (Tzoulas et al., 2007). A review of the benefits to health that exposure to nature may bring by Logan and Selhub (2012) found that contemplating for 20 minutes while in nature created the feeling of relaxation, that in turn lowered cortisol (through a reduction of activity in the amygdala), with the suggestion that this may improve immune functioning. Other studies from the review suggest that anti-cancer proteins are produced in forest settings and there is a decrease in hyperactivity and increase in attention for children with attention deficit hyperactivity disorder when in nature (Logan & Selhub 2012). Furthermore, after controlling for socioeconomic factors and lifestyle choices including smoking, a significant relationship has been found between a reduction in various cancer rates and a greater amount of forest areas. Similar relationships have been reported in China with parkland and mortality rates (Takano et al., 2002), while in the U.S.A. the prevalence of greenspace has been linked with lower incidents of strokes (Hu, Liebens & Rao, 2008). Lastly, in the U.K. greenspaces are thought to fill the health inequality gap between poorer and more affluent areas (Logan & Selhub, 2012). This may be a result of having access to nearby greenspace, which increases the likelihood of visitation and subsequent green-exercise (Pretty et al., 2007). Forms of green-exercise such as walking is also easily accessible and can be enacted in any outdoor setting, whether urban or rural (Barton, Hine & Pretty, 2009) that provides a dual physical and mental health benefit (Hine, Peacock & Pretty, 2008) for example physical and mental vitality (Ryan et al., 2010). Finally, the link between nature and health has been demonstrated in urban work environments, where lower stress levels and lower reported health complaints were related to contact with indoor nature (Largo-Wight, Chen, Dodd & Weiler, 2011).

It has been suggested that the relationship between exposure to nature and physical health benefits are weak (Tzoulas et al., 2007), however it is now more widely accepted that contact with nature does lead to improved physical health outcomes. Simple exposure to nature on its own may not fully explain the physical benefits described, especially those which link available greenspace to disease prevention or longevity. The cultural perception that nature has a positive effect may also have an influence on the physical health benefits reported in much the same way as mentioned earlier regarding mental wellbeing (Hartig et al., 2011). Finally connectedness with nature may also play a role as, coupled with positive personality traits, is thought to offer coping options in order to meet the challenges of stress or loss. This ability to cope may in turn help to provide resilience to disease due to an improved functioning of the immune system (Cervinka, Roderer & Hefler, 2012). A recent review supports this possibility, with the author suggesting that engaging with nature leads to greater immune functioning, acting as a central pathway to further physical health outcomes (Kuo, 2015); thus making the benefit to mental wellbeing and physical health from nature connectedness a dual process, given that the benefit to wellbeing from feeling connected has a direct effect on physical health as well.

Pro-Environmentalism

The benefit of connecting with nature is not limited only to human physical and mental wellbeing. Given that the harm caused to nature by humanity is thought to result from the perception that humanity and nature are separate (McPhie & Clarke, 2015), nature connectedness could potentially counter this disconnection and in turn, lead to pro-environmental behaviours (Tam, 2013). The following subsection presents a brief overview of pro-environmentalism and where nature connectedness fits in before a model is presented of the factors (including nature connectedness) that lead to the formation of pro-environmental behaviour.

Despite a high level of environmental concern globally, irresponsible behaviours still continue (Berenguer, 2007). Pro-environmental behaviour is defined as any behavioural action that minimises the impact on natural environments (Arbuthnott et al., 2014) that include activities such as energy conservation and recycling. It is a mixture of self-interest goals (such as the minimisation of any negative impact to one's own health) and concern for others including that of future generations or other natural species

(Bamberg & Moser, 2007). The exact mechanisms that underlie why pro-environmental behaviours are enacted are unclear. Theoretical models including the Theory of Planned Behaviour or the Schwartz Altruistic Behavioural Model that describe behaviour from a social psychological perspective have been adapted in attempts to explain how pro-environmental behaviours can be encouraged (Berenguer, 2007). These models respectively place an emphasis on intention or values that may be important for the enactment of pro-environmental behaviour but have not conclusively explained how pro-environmental behaviours occur. Nature connectedness has since been proposed as a significant factor for the enacting of pro-environmental behaviours (Arbuthnott et al., 2014) acting as a core motivator for pro-environmentalism (Tam, 2013). While a direct causal link between nature connectedness and pro-environmentalism has not yet been identified, the sensation of connectedness to nature is but one part of a larger interaction that feed into the enacting of pro-environmental behaviour.

Empathy has been shown to increase environmental concern (Berenguer, 2007; Tam, 2013) that is itself an outcome of nature connectedness (Zelenski & Nisbet, 2012) and can be facilitated through anthropomorphism (Tam, Le & Chao, 2013); with environmental concern found to activate pro-environmental behaviour in the form of a simulated allocation of funds to conserve wildlife (Berenguer, 2007). Habit can also affect the uptake of pro-environmental behaviours but through a change in circumstances (such as a house move) habits can be disrupted and, in combination with environmental concern, lead to pro-environmental commuting behaviours (Verplanken et al., 2008). Environmental concern is a component (along with knowledge and guilt) of moral norms that together with attitude and perceived behavioural control are linked to intentions to enact pro-environmental behaviours (Bamberg & Moser, 2007). In addition to moral norms, social norms comprised of injunctive (individual perceptions of what behaviours others may approve or disapprove of) and descriptive (the behaviours others enact) factors predict pro-environmental behaviour (Cialdini, 2003). While social norms have been found to predict pro-environmental behaviours such as not littering, they are influenced by the cultural context in which they are found (Cialdini & Goldstein, 2004). Having an emotional affinity to nature can lead to the formation of positive environmental attitudes (Mayer & Frantz, 2004) that are thought to influence what behaviours are enacted. This is through an emotional attachment felt to local nature creating an interlinked sense of self and place that along with cognitive, social and physical aspects, lead to a desire to protect

the natural space from harm (Scannell & Gifford, 2010b). While affection towards nature is important, it is not the sole component of creating pro-environmental action (Muller et al., 2009). The interaction between moral norms, attitude and perceived behavioural control creates intention which has been found to explain 27% of the variance of pro-environmental behaviours in a large meta-analysis (Bamberg & Moser, 2007). Intention is an important factor in why individuals partake in pro-environmental behaviours but there are clearly other factors that are required beyond intention.

Cognitions also play a role as including nature within the self-concept is thought to make a connectedness to nature implicit that subsequently leads to an increase in biospheric concern and biocentrism (Bruni & Schultz, 2010; Schultz et al., 2004). Biocentric attitudes are positively related to values such as universalism (Schultz & Zelezny, 1999) that in combination with self identifying as an environmentalist, are related to self-reported pro-environmental behaviours (Dono, Webb & Richardson, 2009). Self-identity's importance is further extended as a mediator of the relationship between intentions and pro-environmental behaviour (van der Werff, Steg & Keizer, 2013). Identifying one's self with nature thus influences the actions taken towards the world (Hoot & Friedman, 2011) with specific pro-environmental behaviours including composting kitchen waste and driving economically directly determined by self-identity (Whitmarsh & O'Neill, 2010). Other cognitions such as the anthropomorphising of nature have been found to increase self-reported conservation behaviour (Tam et al., 2013) as nature becomes a similar other and therefore activates self-interest, providing the motivation to engage in pro-environmental behaviours (Verplanken et al., 2008). An untested depiction of possible factors involved in the enacting of pro-environmental behaviours, as presented in this chapter are summarised in figure 2.2, with the factors influenced by a connectedness to nature denoted by (NC).

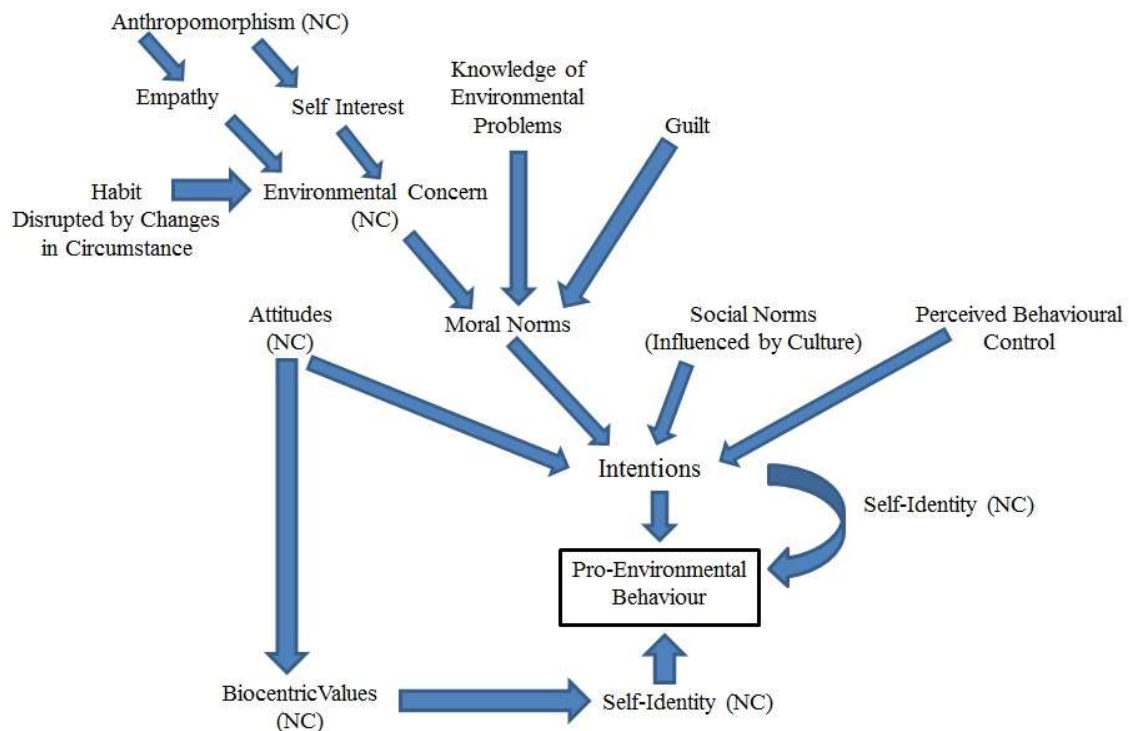


Figure 2.2: A Hypothesised Model of Possible Factors Involved in the Enactment of Pro-Environmental Behaviour

Beyond nature connectedness, alternate methods to promote pro-environmental behaviour have been used that include the use of education and group feedback within the workplace (Carrico & Riemer, 2010) and a reliance on technological innovation to make pro-environmental behaviours easier (Poortinga, Steg, Vlek & Wiersma, 2003). While nature connectedness may not be directly involved in the enactment of pro-environmental behaviours, the sensation of connectedness to nature can lead to increased pro-environmental behaviours indirectly. This occurs through the internal motivation it provides (Arbuthnott et al., 2014) as a result of environmental concern (Nisbet & Zelenski, 2012), pro-environmental attitudes (Mayer & Frantz, 2004) and biocentric values (Schultz & Zelezny, 1999) as part of a much larger interaction of individual factors.

Currently Used Routes to Nature Connectedness

The previous section outlined the physical and mental wellbeing benefits arising from a connectedness with nature and the influence connectedness has on pro-environmentalism. The wellbeing benefits of nature connectedness are well established and are routinely the subject of reviews that draw together the large body of research

currently available. While the benefits of nature connectedness have been frequently investigated, the routes to connectedness have only received limited study. This is problematic, as it would be beneficial to encourage and increase a connection with nature given the wellbeing and pro-environmental benefits it creates. There is therefore a need for a systematic investigation to take place of the routes to nature connectedness (Zylstra et al., 2014) which this thesis aims to do. Before the systematic investigation can take place, it is important to illustrate what is currently known about the potential routes to nature connectedness; the following section provides an outline of the key avenues currently investigated by research into the pathways to nature connection.

Indirect Contact

It is estimated that 50% of the world's population now live in urban environments with the urban population considered to be most at risk of an extinction of nature experiences (Lin et al., 2014). Time pressures and living in an urban, industrialised environment lead to less contact with nature (Arbuthnott et al., 2014) as urban environments are perceived to be a barrier to the human-nature relationship (Beery, 2013). Rural children have been found to spend more time in contact with nature (Muller et al., 2009) with this behaviour then carried over into adulthood as a greater contact with nature is maintained (Hinds & Sparks, 2008). The urban environment has caused a division between humanity and nature that has led to a reduction in contact with nature, which may have drastic consequences for the human-nature relationship (Pyle, 2003). This is due to contact during childhood being important (Martin, 2004) for the formation of a meaningful relationship with nature (Hinds & Sparks) that can lead into conservation behaviours and feeling connected to nature in adulthood (Guiney & Oberhauser, 2009). Research has emphasised the importance of previous and current experiences of nature in increasing an affective connection to nature (Kals et al., 1999) with greater contact increasing the affective connection experienced (Hinds & Sparks) as a positive relationship with nature develops from on-going interactions with the natural world (Martin, 2004). Contact with nature is therefore important for nature connectedness (Arbuthnott et al., 2014) with both actual and virtual contact with nature being investigated empirically.

Direct Contact with Nature

Humanity requires more than a casual relationship with nature; a more meaningful one is needed that can only be achieved through direct experiences of nature (Pyle, 2003). People who are connected with nature are more likely to spend time in natural spaces (Lin et al., 2014). Living in close proximity with a natural space is linked to an increase in social cohesion and neighbourhood satisfaction (Russell et al., 2013) but beyond this contact with nature may be crucial for becoming connected to nature. It is thought that contact with garden space may counter the disconnection with nature brought on by modern, especially urban living (Shaw, Miller & Wescott, 2012). Qualitative interviews indicate access to personal nature spaces such as allotments tap into positive childhood experiences, with plants providing a place to relive positive physical and emotional interactions with nature from childhood (Hawkes & Alcott, 2013). Around 84% of the UK population have access to a private garden space and such spaces are suggested to lead to a sensation of nature connectedness through emotional attachments, formed through the acts of feeding visiting birds and nurturing plants (Freeman, Dickinson, Porter & Van Heezik, 2012). The type of gardening engaged with may be important for a connection to nature as individuals using wildlife gardening, a method of arranging garden spaces to explicitly encourage biodiversity, showed mixed levels of connection with nature, while the activity itself only attracted already interested individuals in engaging with nature (Shaw et al., 2012). Outdoor educators have historically attempted to create a connection with nature through high risk adrenaline inducing activities (Gray & Birrell, 2015). Interviews with outdoor adventure leaders in Australia points to the role of contact that is not necessarily prescriptive, in favour of activities that promote adventure and physical exploration of nature in order to experience a relationship with the natural environment (Martin, 2004). The role of outdoor adventure activities has influenced ecopedagogies that connect often young people with nature through education programmes that focus on experience, knowledge and thinking. A year long programme in Australia that utilised conservation, artistic interpretation and learning about biodiversity in ecosystems, reported increases in nature connectedness and a qualitative expression of a love for nature and recognition of the importance of nature's beauty (Gray & Birrell, 2015).

Contact with nature has been tested empirically with walking in natural settings significantly increasing nature connectedness over exposure to virtual nature (Mayer et al., 2009). Viewing aesthetically pleasing natural settings has been shown to facilitate wellbeing benefits through an increased connection to nature with vegetation within the

local area and outdoor physical activity increasing levels of nature connectedness (Zhang et al., 2014). Nature Relatedness is positively correlated to time spent outdoors (Nisbet & Zelenski, 2013; Zelenski et al., 2009) with an emotional affinity to nature stemming from activities as diverse as zoo visits, walking in rural environments or eating green vegetables (Muller et al., 2009). In a national study of Swedish nationals, activities such as gardening, studying nature, bird watching and walking in nature were all positively associated with a sense of belonging to the natural landscape (Beery, 2013). Childhood experiences of camping, hiking, playing in woods or picking flowers is positively related to protective environmental behaviours in adults (Wells & Lekies, 2006) with childhood experiences again leading to higher levels of engagement and the possession of nature connected attitudes in adulthood (Beery, 2013).

Contact with nature does not facilitate a connection in all instances however. A study by Arbuthnott, et al., (2014) investigated the utility of contact with nature through actual and virtual time spent in natural history museums compared to time spent in parkland. Spending time in parkland was found to not increase nature connectedness scores significantly more than spending time in a natural history museum leading to the assertion that environmental education through museums was a good substitute for actual contact with nature as a virtual natural history environment (using video) proved as effective as visiting a museum in person. However, comparing a passive experience in a park environment with a directed natural history visit are not ideal comparisons, especially when only one setting may produce a cognitive connection as measured by the Connectedness to Nature Scale (Mayer & Frantz, 2004) which is a cognitive measure of nature (Perrin & Benassi, 2009) and used within Arbuthnott et al.'s study.

Virtual Contact with Nature

With an ever increasing urban population, the ability to have direct nature experiences is diminishing (Pyle, 2003), however the urban environment can still offer the opportunity to have meaningful experiences, with the aspects of nature it contains (Newman & Dale, 2013). This has led researchers to investigate what effect engaging with virtual nature has upon nature connectedness when access to 'real nature' is impossible (McDonald, Kirk & Bryan-Kinns, 2015). While an exposure to actual nature provides greater benefits to nature connectedness than virtual natural environments, increases in connection with nature are found after viewing virtual natural scenes (Mayer

et al., 2009). When controlling a nature bot (a robotic exploration vehicle via the internet) in an artificial setting, participants reported feeling mentally restored but indicated a sense of connection with nature required a more immersive and focussed experience (McDonald, et al.). Other attempts include engaging participants with a virtual natural history environment using videos but this was found not to increase nature connectedness scores in university students (Arbuthnott et al., 2014). Virtual natural spaces are not restricted to display screens alone. The use of a natural ‘fantasy journey’ where participants were directed in their imagining of walking through a meadow landscape was used to create a virtual natural environment but was found to have no effect on increasing measures of nature connectedness (Barhold et al., 2014). Indoor spaces can be altered to appear more natural, with indoor floral displays having both a positive (calmness, clear-headedness) and negative (annoyance) effect when viewed (Adachi, Rohde & Kendle, 2000). Mayer et al., (2009) suggest that the use of virtual nature may be beneficial to the sensation of nature connectedness when the experience is immersive for the participant, which may explain the current discrepancy between the interaction with virtual nature and any effect on nature connectedness.

Environmental Education and Learning

Nature based education has been proposed to facilitate nature connection in children and adults (see Ernst & Theimer, 2011; Mace, Woody & Berg, 2012). Environmental education is perceived as a useful tool when trying to protect the environment, where it is thought an understanding of why pro-environmental behaviours are required will lead to the enactment of sustainable behaviours (Lieflander, Frohlich, Bognor & Schultz, 2012). This has been evidenced through positive interactions in childhood, and the influence of parents and teachers being credited as the reason behind the desire to work as a conversationalist in adulthood (Ernst & Theimer, 2011). This has led to calls for an increase in environmental education alongside further contact with nature to produce more pro-environmental and connected individuals (Lin et al., 2014). In the U.S.A., programmes such as ‘take it outdoors’ and ‘youth in the great outdoors’ aim to engage children with nature through contact and education programmes in order to combat a growing disconnection from nature (Ernst & Theimer). However, textbooks

used in educational settings often fail to represent the complexity of nature while reinforcing the notion that humanity is separate from and dominant over nature. Thus environmental educators may be unwittingly contributing to the environmental issues they wish to rectify. This may be due to the framing of the information being conveyed that include terms such as 'natural resources' and 'ecosystem services' that are mechanistic in nature and may contribute to further environmental harm as nature is viewed as a resource to be exploited (Antal & Drews, 2014). It is suggested that being connected to nature is more important than knowledge for addressing the current environmental issues faced by humanity (Lieflander et al., 2012). Using frames that emphasise an emotional relationship with nature in environmental education, conveys to the individual that time and effort is required for the relationship to work, that may manifest through taking personal responsibility for nature and acting within biophysical limits (Antal & Drews, 2014).

Research into the effectiveness of environmental programmes has focussed on assessing the effectiveness of taught programmes, where knowledge of the environment and the species it contains is emphasised. The ability to increase nature connectedness of seven such programmes was conducted with two of the seven environmental education programmes showing an increase. However, the lack of any suitable control group and inherent pre-existing differences casts doubt onto the efficacy of the reported results, while the authors note that the emphasis on learning may have detracted from forming an emotional connection with nature (Ernst & Theimer, 2011). It is suggested that our learning about nature is experiential and that such experiences promote a connection to nature (Simiaka & Samways, 2010), that may not be fostered through education alone. In a study on environmental education programmes delivered to children between the ages of nine to thirteen years old over a four day period within a natural retreat, increases in nature connectedness as measured by the INS scale (Schultz, 2001) were found. Learning on the programme consisted of classification of species within waterways, combined with experiential activities such as bare foot walking on grass and in shallow waterways. However, only children below the age of eleven had a sustained increase in INS scores after four weeks (Lieflander et al., 2012). It is possible that as the INS is a cognitive measure of nature connectedness (see chapter three), that the affective experiential aspects of the learning programme were not measured, which may have shown an increase in all the age groups represented. A more recent study found that engaging with nature through creative activities including photography and sculpture increased implicit nature

connectedness when educational nature trails did not (Bruni et al., 2015). An undergraduate environmental psychology programme in the U.S.A. that focused on generating positive affiliations with nature through direct experiences and an immersion in nature was suggested to contribute not only to personal growth for the students but also to an increased awareness and ability to apply psychological solutions to environmental problems (Mace et al., 2012). The research and practice highlighted in this section suggest that merely knowing does not lead to a connectedness with nature; forming an emotional connection with nature through experiential learning within natural environments is far more important instead.

Rationale for the PhD

The perspective that humanity is culturally unique (Catton & Dunlap, 1978) and therefore distinct from nature has become the prevailing cultural viewpoint in westernised societies (Merchant, 2006). This anthropocentrism that advocates the use and exploitation of nature for humanity's benefit (Antal & Drews, 2014) stems from monotheistic religious teachings (Scofield & Margulis, 2012), hierarchical valuing of gender and nature (Plumwood, 1993), and the reductionist scientific method (Bordeau, 2004). As a result, individuals in western populations generally no longer feel a resonance with the natural world that has in turn contributed to the environmental issues of climate change and widespread loss of other species currently faced by humanity in the 21st century (Frantz et al., 2005). There is a pressing need to avert the loss of biodiversity, preserve natural environments and protect all of nature's (humanity included) health and wellbeing. At first glance, adopting a biocentric ethos whereby nature is valued for its intrinsic value would offer the solution. However, biocentrism separates humanity and nature, as nature is left untouched by human influence in order to flourish (Lamb, 1996); something which may, inadvertently, lead to the harm it seeks to prevent by reinforcing the perception of separateness. Another potential avenue that could be explored is an abandonment of technological advancement and return to a more natural way of living, akin to how our ancestors did. This approach is practically flawed given that the perception of our ancestors having no impact on the environment is false; while humanity's current technological advancement is crucial for the survival of our species. But most importantly, humanity as a species has never left nature and will always be a part of it

(Kahn & Hasbach, 2012); therefore a societal regression is not necessary. What is needed is a re-connection of the self with nature (Schultz, 2001) as this offers a potential solution to the perception of separation and a reduction in environmental harm (Tam, 2013) through the mechanisms covered within this chapter. It could be argued that connecting to nature implies a separation from nature (as a connection to another non-human entity is required) but it is not a re-connection with another entity per se. Rather, connecting with nature is the realisation that humanity and all other life belong to the same natural community (Mayer et al., 2009) and is therefore an acceptance of a relationship and connection that already exists.

Urban living provides a potential stumbling block to re-connecting humanity to its wider natural community. With ever increasing numbers of people now dwelling in urban environments (Calpaldi et al., 2014) the opportunity to have meaningful experiences with nature are perhaps diminished, causing an extinction of nature experiences that are thought to further perpetuate a disconnection with nature (Pyle, 2003). The pressures of modern living may make a frequent engagement with nature through contact activities such as camping or hiking impractical and difficult to enact. However, the urban environment still contains elements of nature and its own biodiversity that offer opportunities to have meaningful interactions with nature (Newman & Dale, 2013). Opportunities to engage with nature and re-connect are there, but given the potential time pressures faced by many urbanites, there is a need for any activities that promote nature connectedness to be easily engaged with within local, urban spaces (Arbuthnott et al., 2014). Six possible routes to nature connectedness have been identified including walking (Mayer et al., 2009) adventure activities (Martin, 2004) gardening (Freeman, et al., 2012), noticing good things such as colour, weather, and sensations in nature (Richardson, Hallam & Lumber, 2015), anthropomorphising nature (Tam et al., 2013) and environmental education (Ernst & Theimer, 2011). However, the possible routes to nature connectedness have been investigated disparately; with a far greater body of knowledge available on the wellbeing benefits of connecting with nature (see Capaldi et al., 2014; Hartig et al., 2011; Russell et al., 2013). The investigation of how a connectedness to nature is established and maintained is an important goal for empirical research, given the wellbeing and potential pro-environmental benefits it has been linked to (Arbuthnott et al., 2014). Extending this beyond the remit of the theoretical, the often descriptive nature of research into various facets of nature connectedness has led to calls for more applied

research (Clayton, 2012) and for a systematic investigation of the routes to nature connectedness to be carried out (Zylstra et al., 2014).

This thesis presents the first systematic investigation of the pathways to nature connectedness that meets the need for an investigation to be carried out into the routes to nature connectedness. Additionally, the thesis will also present an application of the identified pathways through interventions which attempt to counter a disconnection by increasing nature connection. While the programme of research presented in this thesis has utilised a scientific approach, the perspective and methods used have attempted to investigate the data in a holistic manner, to avoid focusing on the minute that the reductionist method often employs; one which has contributed to the separation of humanity and nature (Bateson, 2002). The investigation begins with an initial qualitative exploration of the potential pathways to connectedness with nature in chapter three before an overview of the measurement of nature connectedness is provided in chapter four. Chapter five then builds upon the findings of the qualitative study with two quantitative surveys that create a model of the pathways to nature connectedness. In response to the need for more applied research, chapters six and seven present two intervention studies that utilised the identified pathways in an attempt to increase nature connectedness. As a holistic approach has been used throughout this work it was important for the final research study presented in chapter eight to return to a qualitative methodology used in the first research study. Chapter nine then provides a discussion and overview of how the pathways can be used by individuals and large organisations to engage people with nature in targeted ways, in order to encourage a connection with nature to benefit not only humanity but the wider natural community to which we belong.

Chapter Three - The Measurement of Nature Connectedness

The literature review presented in chapter two outlined the need for a systematic enquiry of the routes to nature connection. Before the potential pathways to nature connectedness are investigated further as part of the systematic investigation by this thesis, it is important to outline the measurement tools available. The following chapter will provide an outline of the explicit and implicit measures of nature connectedness, illustrate the conceptual similarities and differences between the available scales that will allow for the selection of the measures that will be used to assess nature connectedness quantitatively, in the thesis.

Introduction

The need to reconnect humanity with nature is an important area for research, one that is often covered within the literature (Tam, 2013; Perkins, 2010) due to the benefit to wellbeing (Capaldi et al., 2014) and possibly pro-environmental behaviours (Davis et al., 2008; Dutcher, Finley, Luloff & Buttolph-Johnson, 2007; Mayer & Frantz, 2004) that a connection with nature leads to. Empirical research that investigates the relationship between nature connectedness and its associated benefits, often use psychometric scales when conceptualising what connectedness with nature is. At the time of writing this chapter, 13 measures of nature connectedness have been published and presented as providing valid and reliable assessments of an individual's relationship with nature. While there are a range of measures available to assess connectedness to nature, there are differences between the theoretical positioning of the measures that has rarely been investigated (Tam, 2013). There is a need therefore for clarity over how the available measures overlap and what each scale is assessing in terms of connectedness with nature (Sparks, Hinds, Curnock & Pavey, 2014).

In total, 12 of the 13 measures were created to assess the level of connectedness to nature in adult samples with all currently available measures presented in table 3.1. While the majority of these measures were originally designed to be used with adult samples, some have been used in research with children and adolescents such as the Inclusion of Nature in Self Scale (see Bruni & Schultz, 2010) and still others have been amended for such purposes e.g. the Revised Connectedness to Nature Scale (Frantz, Mayer & Sallee, unpublished). Only the Children's Affective Attitude to Nature Scale (Cheng & Monroe,

2012) was developed solely as a measure of connectedness with child samples as the Implicit Association Test (Bruni & Schultz, 2010), often seen as child friendly, was developed as an implicit measure for all ages. There are clearly a wide range of measurement tools available for a researcher to use when investigating nature connectedness as all eleven of the scales claim to measure aspects of an individual's connection with nature. However, if all thirteen of the scales are indeed measuring the same construct (Capaldi et al., 2014; Tam, 2013), this may indicate a redundancy as 13 measures would simply not be needed. Therefore this chapter aims to examine the measures in detail and determine what is being measured and whether this really includes the concept of nature connectedness.

Table 3.1: Measures of Connectedness to Nature

Measure (Including Author)	Definition of Connectedness	Sample Item
Emotional Affiliation to Nature Scale (EAN) Kals et al., (1999)	Connectedness is the result of emotional bonds with nature beyond simple cognition	‘If I spend time in nature today, I feel a deep feeling of love toward nature’
Inclusion of Nature in Self Scale (INS) Schultz, (2001)	Nature becomes part of an individual’s self-concept	Seven Venn diagram circles with increased proximity to one another
Environmental Identity Scale (EID) Clayton, (2003)	The natural environment is an important factor in an individual’s self-determination	‘I spend a lot of time in natural settings (woods, mountains, desert, lakes, ocean)’
Connectedness to Nature Scale (CNS) Mayer & Frantz, (2004)	Self-realisation that humanity is part of the natural community, leading to love and respect for nature	‘I think of the natural world as a community to which I belong’
Implicit Association with Nature Test (ICN) Schultz et al., (2004)	Nature becomes part of an individual’s self-concept	A word e.g. ‘animal’ that can be assigned to the category of either ‘nature’, ‘built’, ‘me’ or ‘not me’
Connectivity with Nature Scale (CWN) Dutcher et al., (2007)	Humanity and nature are interdependent; humanity is connected to nature as nature is connected to humanity	‘The world is not merely around us but within us’ three circular Venn diagrams are also used (similar to the INS)

Commitment to the Natural Environment Scale (CNE) Davis et al., (2008)	Connectedness to nature functions in the same way as a committed relationship with another human being	'I expect I will always feel a strong connection to the environment'
Allo-Inclusive Identity Scale (AIS) Leary, Tipsord & Tate (2008)	Nature becomes part of an individual's self-concept	'The connection between you and a tree' rated on one of seven Venn diagrams (similar to the INS)
Nature Relatedness Scale Nisbet et al., (2009)	Appreciating how all life is connected and has value leading to nature becoming part of the self-concept	'I feel very connected to all living things and the Earth'
Love and Care for Nature Scale (LCN) Perkins (2010)	Nature is intrinsically valuable leading to a desire to protect nature out of a love for nature	'Protecting the wellbeing of nature for its own sake is important to me'
Children's Affective Attitude to Nature Scale (CAAN) Cheng & Monroe (2010)	An emotional response to nature based on enjoyment, empathy, responsibility and a sense of oneness	'Humans are part of the natural world'
Disposition to Connect with Nature Scale (DCN) Brugger, Kaiser & Roczen (2011)	A preference for engaging with nature over other options at a personal cost to the individual	'I get up early to watch the sunrise'
Connectedness to the Natural Environment Scale (CNES) Sparks et al., (2014)	A affective and cognitive construct that stems from the basic need to relate to nature leading to protective intentions towards nature	'I feel a sense of affinity with the natural environment'

The Measures of Nature Connectedness

One of the first measures to be developed on the human relationship to nature was the Emotional Affiliation to Nature Scale (EAN), that was created to investigate positive, affective responses to nature and how they influence and shape nature connectedness in a dispositional way (Muller et al., 2009). The EAN contains 16 items measuring four subscales: love for nature ('if I spend time in nature today, I feel a deep feeling of love toward nature'), feelings of safety ('mostly, I am accompanied by my partner/family when I spend time in nature'), feelings of freedom ('during my childhood I spent time in nature accompanied by my friends/youth groups'), and a sense of oneness with nature ('nowadays I spend a lot of time in nature'). All 16 items focus on positive experiences in nature both in the past (between the ages of seven to twelve years) and current experiences on a 6 point Likert scale (Kals et al., 1999). The scale is reliable ($\alpha = .80$, Kals et al.) and has been found to predict personal pro-environmental behaviours (Tam, 2013).

The inclusion of nature in self scale (INS) is a single item measure of a cognitive connection, that examines an individual's self-schema towards nature (Tam, 2013), and is based on the Inclusion of Other in Self scale originally created by Aron, Aron and Smollan in 1992 (Clayton, 2012). Individuals select a pictorial representation of their own relationship with nature from seven possible circular/Venn diagram representations (Clayton, 2012; Schultz, 2001). The seven representations range from the self and nature circles being separate through to varying degrees of ever closer spatial proximity leading to self and nature as one circle (Dutcher et al., 2007; Schultz, 2001). The INS has been found to positively relate to environmental behaviours and concern for the environment (Clayton, 2012; Dutcher, et al.; Schultz, 2001). While single item measures have limited reliability and validity, the INS becomes much more effective when used in conjunction with other measures of nature connection, as the CNS, NR and INS have been found to inter-correlate with one-another indicating a conceptual overlap (Tam, 2013). The INS does not seem to suffer from any fundamental psychometric issue (Tam, 2013) as it has been noted that the INS is unexpectedly precise when assessing individual connection to nature for a single item measure (Brugger et al., 2011).

Despite the reported strengths of the INS, even Schultz conceded that the measure was not without its limitations (see Bruni & Schultz, 2010). This led to the creation of the

Implicit Connections to Nature test (ICN) as a measure of nature connectedness that taps into a user's biospheric values (Bruni & Schultz, 2010). The ICN was designed to determine a user's level of connectedness with nature that in turn should predict the level of environmental concern they possess (Schultz et al., 2004). The ICN has been used to measure implicit beliefs in other areas and was adapted as a follow up to the research that led to the creation of the INS (see Schultz, 2001) in order to overcome the limitations of the measure being a single item, self-report assessment tool (Schultz et al.). The ICN utilises a computer administered word association test where words are matched to categories by the participant with the following four categories available: 'nature', 'built', 'me' and 'not me' with words such as 'trees', 'street', 'self' and 'other' (Schultz et al.). While the ICN does indicate an implicit measure of connectedness to nature, there are possible limitations inherent within the measure. The ICN has been amended since its conception to include balanced word lengths and positive and negative words for both the nature and built categories (Bruni, Chance, Schultz & Nolan, 2012). However, the use of non-living nature items may be problematic as connected individuals are drawn to other living beings (Nisbet et al., 2009) rather than non-living nature. Nature connectedness is also subjective (Nisbet & Zelenski, 2013) and thus may alter the positive or negative loading of the words used by the ICN and in turn, the level of nature connectedness reported. Despite this, the ICN measure is related to explicit environmental concerns with acceptable test-retest reliability up to four weeks later (Bruni & Schultz, 2010).

The INS is not the only measure to assess the extent to which nature is part of an individual's sense of self as the Environmental Identity scale (EID) was created from the notion that self identity and the role of nature on this, can be assessed as an individual differences trait (Clayton, 2003; 2012). The EID can be administered as either the full measure with twenty four items or in short form, consisting of eleven items both assessing nature connectedness and how important this is for the responder (Clayton, 2012). The measure has been reported to have a high reliability ($\alpha = .90$) and whilst the EID was originally reported as a one factor measure of environmental identity (Clayton, 2003), five factors have been suggested more recently (Clayton, 2012; Olivos & Aragonés, 2011). The EID has shown positive correlations with ecocentric attitudes held by both members of the public and zoo workers and is therefore proposed to tap into the cognitions held on environmental issues (Clayton, 2012).

The connectedness to nature scale (CNS) was designed to assess the degree to which an individual feels a part of a broader natural world from an emotional response to nature (Mayer & Frantz, 2004). The measure was inspired by Aldo Leopold's (1966) emphasis on the realisation that nature is a community to which humanity is a part of, leading to a use of nature shaped by love and respect. Subsequent analysis of the scale has indicated the CNS measures a cognitive, rather than affective dimension of nature connectedness (Frantz et al., unpublished; Perrin & Benassi, 2009). Despite this, the measure has been found to be valid and reliable ($\alpha = .79$) with high internal consistency. The CNS can be administered either as a state (containing 13 items) or as a trait measure (14 items). An example item is 'At this moment I'm feeling a kinship with animals and plants' with the extra fourteenth measure on the trait version being 'My personal welfare is independent of the welfare of the natural world'. The CNS is scored on a five point Likert scale and has been found to positively relate to the New Environment Paradigm measure (Mayer & Frantz, 2004). However, the findings that the CNS is a predictor of environmental concern may be due to artificial confounds present within the scale towards this phenomenon (Brugger et al., 2011) and so any links to pro-environmental attitudes need to be treated with caution.

The Connectivity with Nature measure was developed as a measure of reciprocal connectedness with nature as often nature connectedness is seen as a unidirectional construct (Dutcher et al., 2007). The measure contains five items which has a comparatively low reliability compared to other measures ($\alpha = .72$, Tam, 2013) and has led to the measure being thought of as unnecessary as it does not represent a significant departure or improvement from other measures also available (Clayton, 2012). Four of the items are rated on agreement on a 5 point Likert scale, an example item being 'I feel a sense of oneness with nature'. In addition to the four items, three self and nature graphical circles similar to the INS measure are also included to indicate nature as a part of the self (Dutcher et al.).

The Allo-Inclusive Identity Scale (AIS) is a 16 item measure that includes eight Venn diagrams to represent an individual's connectedness between self and nature with ever-increasing overlap between circles titled 'you' and 'other' (Howell, Dopko, Passmore & Bruno, 2011). The measure has demonstrated positive correlations with

ecological concern (Howell et al.) with reasonable reliability ($\alpha = .75$). The AIS has been linked to kindness (Davis et al., 2009)

The Nature Relatedness scale (NR) is a measure of individual connection to nature related to the concepts of deep ecology. Designed as a measure of trait connection to nature, the scale differs from the CNS as it also includes aspects of physical nature connection (Nisbet et al., 2009). During its creation, the NR scale was influenced by the Biophilia Hypothesis, with a high or low score indicating whether biophilic tendencies have been suppressed or acted upon (Nisbet, 2011; Nisbet & Zelenski, 2013). The NR contains 3 factors: self ('I always think about how my actions affect the environment'), experience ('I take notice of wildlife wherever I am') and perspective ('even in the middle of a city I notice nature around me'). All 21 items are measured on a 5 point Likert scale with the full NR measure showing good reliability ($\alpha = .87$), validity and internal consistency. The NR can also be administered in a short form (the NR-6), consisting of six items from the full 21 item list, again with good validity and reliability ($\alpha = .89$). As the NR-6 utilises only six items, only two factors are represented when the short form is used; self and experience (Nisbet & Zelenski). NR has been linked with increased satisfaction with life, purpose in life and vitality (Nisbet & Zelenski), along with happiness and sustainable behaviours (Zelenski & Nisbet, 2012).

A measure of Commitment to the Natural Environment (CNE) was developed by Davis et al. (2008) as an assessment tool to measure a commitment and close relationship to nature as a positive person-nature relationship was deemed to function as a predictor of pro-environmental behaviour. The measure was adapted from pre-established measures of interpersonal relationships and includes eleven items scored on a 9 point Likert scale (Davis et al.). The measure has been found to relate positively with both the INS and NEP measures, indicators of pro-environmental behaviour and has a strong reliability ($\alpha = .87$, (Davis et al.; Davis et al., 2011).

The Disposition to Connect with Nature Scale (DCN) is different from the other nature connectedness measures as it is an indirect assessment of connectedness achieved through the application of Campbell's Paradigm (see Kaiser, Byrka & Hartig, 2010) by utilising measures of both past engagement with nature and reflective evaluations through forty items (Brugger et al., 2011). The measure utilises a range of responses including a 5

point Likert for 26 items, a 3 point Likert scale for a further 17 items and 14 items assessed on a yes/no response. The measure has been positively and significantly linked to self-reported pro-environmental behaviour measures such as the New Ecological Paradigm by Dunlap, van Liere, Mertig & Jones (2000) and selected measures of environmental identity (Brugger et al.).

The only measure developed exclusively to assess connectedness in child samples is the Children's Affective Attitude to Nature Scale (Cheng & Monroe, 2010) and was based on findings that experiences of nature before the age of eleven were important to the relationship with nature in adulthood (see Muller et al., 2009; Wells & Lekies, 2006). The items were generated from interviews with children were further refined via a subsequent factor analysis with four constructs identified: empathy for creatures, sense of oneness, sense of responsibility and enjoying nature (Cheng & Monroe, 2010). The measure is intended for use in children between the ages of nine to eleven years old, has shown good reliability ($\alpha = .87$) and uses a 5 point Likert scale, with the measure shown to predict children's interest in engaging with nature (Cheng & Monroe, 2010).

The Love and Care for Nature measure was created to assess an individual's affective connection to nature as caring for and loving nature was seen to relate directly to the desire to protect nature from harm (Perkins, 2010) and so builds upon the notion of including nature in one's own self-concept as proposed by Schultz (2001). The measure also aimed to tap into reverence, awe and a love for nature in line with the Biophilia Hypothesis (Perkins, 2010) with 15 items, an example of which is 'I feel joy just being in nature'. All items are rated on a seven point Likert scale with the measure having a strong reliability ($\alpha = .97$).

Most recently a connectedness measure has been created that is a synthesis of other established measures that is brief and can be used to help predict intentions to enact pro-environmental behaviours. The connectivity measure was created by Sparks, Hinds, Curnock and Pavey (2014) and consists of two components: caring for nature and connection to nature. The measure was found to have a high reliability ($\alpha = .94$) and consists of 5 items, the mean of which indicates the connectedness to nature score. An example item is 'I feel a strong sense of affinity with the natural environment' with the

measure being significantly, positively linked to the intention to enact pro-environmental behaviour (Sparks et al., 2014).

Implicit Versus Explicit Measures of Nature Connectedness

The majority of the measures presented are reflective, self-report tests of an individual's connection to nature and so the explicit connectedness measures may be at risk of self report bias (either consciously or unconsciously) by respondents (Brugger et al., 2011). The social desirability that may be present when answering the items of the explicit measures could inflate the distribution, or increase the mean scores that the measures use to indicate the level of the nature connectedness of the respondent (Bruni & Schultz, 2010). Therefore even though the explicit measures all have high reliability estimates, caution must be taken when interpreting the levels of connectedness to nature indicated, as over inflated scores could be produced (Brugger et al.). A potential solution to the problem of response bias and overinflated scores is the use of implicit measures of nature connectedness. Of all the measures, only the ICN and DCN are non-self-reflective and have been suggested as being better able to assess aspects of an individual's connection to nature that are beyond any conscious awareness (Brugger et al.). However, 9 out of the 11 measures currently available are explicit and this may be due to implicit measures being difficult to create (Schultz et al., 2004), leading to a glut of explicit measures being produced.

Yet two implicit measures of nature connectedness are available and if the explicit measures are inferior as suggested, it would be expected that the uptake in use of such measures would increase for research undertaken on levels of nature connectedness. Currently explicit measures of nature connectedness are more widely used that may be a consequence of implicit measures being difficult to administer (Schultz et al., 2004) as administering a forty item DCN implicit measure will not always be practical despite any improvements to the validity of nature connectedness measured (Brugger et al., 2011). The ICN is not without limitations, as despite being deemed reliable over time by the original authors, the measure did not meet the requirements as an improvement on the INS measure (Bruni & Schultz, 2010). Subsequent changes to the scoring of the ICN and wording used were intended to improve the validity of the measure (Bruni et al., 2012). However, the measure still conceptualises nature connectedness as a one-dimensional,

cognitive construct (Bruni et al.) that is not subjective. This is despite research indicating that nature connectedness is an individual, multi-dimensional construct (Tam, 2013) that includes affective responses to nature (Perkins, 2010; Nisbet et al., 2009). Initially, the implicit measures of nature connectedness were considered to be theoretically superior to the explicit measures (see Brugger et al., 2011) yet conceptual limitations are still present within the ICN and DCN. In addition, explicit measures such as the CNS and NR have been shown to have discriminatory validity, being unrelated to the personality trait of neuroticism (Nisbet et al., 2009; Tam, 2013). This is especially important given that convergent and discriminatory validity, of which the NR and CNS have been shown to have (Tam, 2013), eliminates the potential issues of over-inflated scores and self-report bias to some degree. Given the reliability issues of the ICN and unwieldy size of the DCN, along with the validity of measures such as the CNS or the NR, this explains their widespread use; especially given the compact nature and strong reliabilities that the measures offer. It will be important for more research comparing the differences between explicit and implicit measures of connectedness to be conducted (Clayton, 2012) but until such comparisons are made, research will continue to utilise explicit measures such as NR and CNS when investigating nature connectedness.

Convergent Validity of Connectedness to Nature

Measuring the relationship between humanity and nature has been undertaken through a variety of assessment tools, each measuring different theoretical conceptions of nature connectedness that were summarised in table 3.1. It has been noted that the explicit measures of nature connectedness such as the CNS, INS and NR all share a high convergent validity with one another (Brugger et al., 2011; Tam, 2013). While differing theoretical positions exist, common themes are present within the measures of nature connectedness. All of the measures conceptually examine the relationship between nature and humanity and how this is interpreted (Capaldi et al., 2014; Tam, 2013). The common themes are especially present in the CNS and INS and include caring for nature's creatures due to empathy or sympathy, nature experiences, enjoying nature and feeling part of a natural community (Cheng & Monroe, 2010). This is not surprising, given that the INS, a measure the self and nature as one, informed the development of both the CNS (Mayer & Frantz, 2004) and NR (Nisbet et al., 2009) measures. Using existing scales to both inform and validate a new measure is a common practice in scale development as the

CNS and INS were further used when testing the reliability of the DCN (Brugger et al., 2011) and the LCN (Perkins, 2010), so it would be expected that some degree of conceptual overlap would be present between those nature connection measures.

The question over whether measures of nature connectedness have a convergent validity was tested by Tam (2013) in a large study comparing nine of the nature connectedness measures, while also measuring wellbeing and pro-environmentalism. There was a significant overlap between all of the measures on the wellbeing and pro-environmental outcomes used that indicated all of the measures included within the study shared a high level of convergent validity (Tam, 2013). There were examples of some discriminant validity due to the differences between the measures possessing stronger relationships with the criterion variables: NR being related to personality traits and wellbeing, the CNS with current engagement with nature and the LCN showing the strongest, significant relationships to wellbeing and pro-environmental behaviour (Tam, 2013). Comparing the convergent and discriminant validities of the measures currently available indicates that a connection to nature is a multidimensional concept with a core theme of humanity being a part of nature, something that is assessed by the measures with each measure focussing on a selected aspect of this relationship (Tam, 2013).

Conclusion

While Tam's study was extensive it was limited by the inclusion of only explicit measures, despite the claim that implicit measures such as the ICN and DCN are 'superior' (Brugger et al., 2011); something that requires further examination. The absence of these measures coupled with the creation of the CNES in 2014 will have an unknown bearing on the conclusions drawn, therefore even though nature connectedness may, conceptually be a multidimensional construct, a full testing of the concept and a unified measure of nature connectedness is still required. This could be achieved through the development of a short, implicit and multi-dimensional measure; as this may allow for a clearer and more specific assessment of connectedness to nature to be undertaken. Until such a measure is created, measurement scales that tap into affective and cognitive connectedness such as the CNS and INS and those that are multidimensional and provide a short form such as NR give the best performance (Zylstra et al., 2014); providing researchers with a quantifiable and sensitive assessment of nature connectedness. With

this in mind, the NR and CNS measures will be utilised when quantitatively testing nature connectedness for this thesis.

Chapter Summary

This chapter presented the eleven currently available measures of nature connectedness, compared the differences between the implicit and explicit measures and determined that the Nature Relatedness and Connection to Nature scales as the measures which were best suited to measure nature connectedness within this thesis' body of research. This chapter also determined that a shorter, more practical implicit measure of nature connectedness was required given the possible bias that may occur when using explicit measures. While the development of a new implicit measure would make an ideal topic for a PhD, this thesis will focus on the specific pathways to nature connectedness instead. Doing so is an important extension of knowledge that would create a theoretical model of the pathways that could inform the creation of a new implicit measure to assess nature connection. Given the glut of nature connection measures currently available, with the two identified explicit measures being used for the research contained within this thesis being valid and reliable, the need to develop a new measure is less pressing. The identification of the pathways to nature connection is a more urgent area of enquiry given the wellbeing and potential pro-environmental benefits it leads to. This will be addressed in the following two chapters; chapter four will present an initial qualitative exploration of the potential pathways to nature connectedness before a quantitative investigation will take place in chapter five which utilises the Nature Relatedness and Connection with Nature scales in two online surveys to investigate potential pathways to nature connection.

Chapter Four – The Seven Pathways to Nature Connectedness: A Focus Group Exploration

The research presented in this chapter is the first of five studies that together comprise a systematic investigation into pathways to nature connectedness. To begin this systematic enquiry, a qualitative methodology was used, with an initial exploration conducted into the possible pathways to nature connectedness, through three focus groups that utilised a realist epistemology. The study was peer reviewed and was due to be published in the *European Journal of Ecopsychology* in 2016. Changes have been made to the original article accepted for publication in order to avoid repetition of literature already covered in chapter two. For the original article please see:

Lumber, R., Richardson, M. & Sheffield, D. (in press). The seven pathways to nature connectedness: A focus group exploration. *The European Journal of Ecopsychology*.

Introduction

Humanity often perceives itself as separate from nature, especially in industrialised western societies (Vining et al., 2008). This has led to research aiming to reconnect humanity with nature becoming a common theme within the literature (Tam, 2013). The development of a positive human-nature relationship can arise from engaging with nature through the nine values of Biophilia (Kellert & Wilson, 1993) and through the sensation of being connected with nature (Mayer & Frantz, 2004). Often Biophilia and connectedness to nature are thought to relate with Biophilia acting as an innate desire to connect with nature (Kals et al., 1999; Nisbet et al., 2009). While it has been previously proposed that perceiving similarity with nature through applying human characteristics (Tam et al., 2013), childhood experiences (Muller et al., 2009), walking in nature (Mayer et al., 2009) and taking care of plants (Freeman et al., 2012) are related to, and therefore facilitate nature connection, the biophilic routes to connectedness have not been examined systematically in any published research to the researcher's knowledge. This chapter outlines an initial qualitative exploration of the routes to nature connectedness from the perspective of individuals engaging with nature, framed through the Biophilic values. For an overview of the Biophilia Hypothesis and nature connectedness, please refer to the literature review presented in chapter two.

Engaging with Nature and Connectedness

There are many ways of engaging with nature in order to develop a connectedness with it. It is thought that contact with garden space may counter the disconnection with nature brought on by urban living (Shaw et al., 2012). Qualitative interviews have indicated access to personal nature spaces such as allotments tap into positive childhood experiences, with plants providing a place to relive positive physical and emotional interactions with nature from childhood (Hawkes et al., 2013). It is reported that 84% of the UK population have access to private gardens with such spaces thought to facilitate the sensation of nature connectedness through emotional attachments formed by feeding visiting birds and nurturing plants (Freeman et al., 2012). The type of gardening engaged with may be subjectively important as individuals taking part in wildlife gardening, a method of arranging garden spaces to explicitly encourage biodiversity, had a greater average sense of nature connectedness for some wildlife gardeners, while others had a lower connection with nature score than the general public (Shaw et al., 2012). Contact with nature has been tested empirically with walking in natural settings significantly increasing nature connectedness over exposure to virtual nature (Mayer et al., 2009). Viewing aesthetically pleasing natural settings facilitated wellbeing benefits through an increased connection to nature (Zhang, et al., 2014) with vegetation in the local area and outdoor physical activity increasing levels of nature connectedness. Purposely focussing attention on and noticing nature has been linked to nature connectedness; with growth of plants, finding beauty and wonder within the natural landscape examples of key themes contributing to increases in nature connection (Richardson, Hallam & Lumber, 2015). Time outdoors has a positive correlation with Nature Relatedness (Nisbet & Zelenski, 2013; Nisbet et al., 2009) while an emotional affinity to nature is linked to activities as diverse as zoo visits, walking in rural environments or eating green vegetables (Muller et al., 2009). In a national study of Swedish nationals, activities such as gardening, studying nature, bird watching and walking in nature were all positively associated with a sense of belonging to the natural landscape (Beery, 2013). Finally, childhood experiences of camping, hiking, playing in woods and picking flowers are positively related to protective environmental behaviours as adults (Wells & Lekies, 2006) with childhood experiences again leading to more engagement and the possession of nature connected attitudes in adulthood (Beery, 2013).

Clearly some pathways facilitate a connected relationship with nature more effectively than others. The routes to a positive human-nature relationship have been investigated largely in an isolated manner without any systematic focus. What is needed is an exploration of the pathways to connectedness via a systematic approach that utilises established theory. As the Biophilia Hypothesis has been proposed to function as an innate desire to connect with nature, there is a need to explore how the nine values of biophilia might lead to the formation of a connectedness to nature through a methodical enquiry. To that end, an exploration of the pathways to nature connectedness was undertaken using a focus group methodology, structured around the nine values of biophilia.

Aim

The study aimed to explore what factors are involved in becoming connected to nature from the perspective of individuals who engaged with nature via the biophilic values, with the participant's biophilic engagement with nature assessed by the researcher.

Method

Participants and Focus group Structure

A total of 11 participants (3 female) took part in one of three focus group discussions. Participants were recruited from local groups involved in a range of nature based activities as well as staff and students from the University of Derby. The groups and individuals were invited to take part in the study based on the type of activity they regularly undertook that involved an engagement with nature. It is acknowledged that the sample of participants contains an element of bias towards individuals who had a prior drive to seek nature. It was important to assign participants to groups where similar others were present, either in terms of their interest or their background to enable a positive group dynamic to form (Davies, 1999; Lehoux, Poland & Daudelin, 2006). This was done through the activity the participant regularly engaged with being mapped onto a value of Biophilia by the researcher with the participant assigned to the focus group that was structured around that particular value. For example a participant who worked as a pest controller was assigned to the dominionistic focus group whereas a participant who was a practicing zoologist was assigned to the ecologicistic-scientific group. Each focus group covered three Biophilic values; utilitarian, dominionistic and negativistic in the first

group, aesthetic, symbolic and naturalistic in the second and humanistic, ecologicistic-scientific and moralistic in the third. These three groupings were specifically chosen in order to create a positive group dynamic as the values grouped together were deemed the most similar to one another by the authors.

Procedure

The nine values of biophilia were used as a framework to explore the experiences and views of the participants with each focus group covering three values that were deemed similar in their essence. All of the focus groups took place at the University of Derby with participants provided with refreshments, but no financial or other incentive was offered. Participants were provided with a combined brief/consent form with the details of the purpose of the study and their rights to withdraw. After agreeing to take part the participant would then create a pseudonym to ensure anonymity when extracts were used.

A schedule was created for the focus group (see appendix 4.2, 4.5 and 4.8) that covered the order of key questions, words or phrases linked to the questions used to encourage discussion and the order of prompts to be used. To start with, an ice-breaker activity was used that involved participants introducing themselves and describing an animal they would wish to be and providing a reason for their choice. Once each participant had introduced themselves, a group discussion on what they thought nature connectedness was, was enacted, with a 'mind map' created based on the participant responses (see appendix 4.3, 4.6 and 4.9). A series of prompts were then presented to facilitate discussion on how nature connectedness could be gained or increased by relating to nature through the particular Biophilic value. Each of the prompts was based on one of the values of Biophilia with three prompts used in each focus group. These included physical objects (plants, classification charts, nature-based art), images (farms, adverse weather, dams, animal charity logos, nature based phrases) and the Inclusion of Nature in Self scale (Schultz, 2001). The participants were free to discuss the topic area with one another in order to generate ideas with the researcher acting as a moderator to ensure the discussions stayed on topic, that all participants were able to take part equally, and that all three biophilic values were covered. It was important to accurately document the discussions held within the focus group so each was recorded using a Dictaphone and supplemented with researcher notes (Kidd & Parsall, 2000) to produce a transcript containing the interaction data for subsequent thematic analysis. Each focus group discussion lasted for an hour, after which the

participants were provided with a debrief sheet explaining the purpose of the study and their right to withdraw up to three weeks after the focus group had taken place.

Analytical Method

Thematic analysis is perhaps the most often used qualitative approach in research (Buetow, 2010; Roulston, 2001) as the flexibility it affords can be tailored to a semantic (Bailie, Kuyken & Sonnenberg, 2012) or a deeper, phenomenological approach (Sullivan, 2003), dependant on the research aims (Braun & Clarke, 2006). Because the aim of the research was to examine the factors involved in facilitating nature connectedness a semantic approach was chosen. The semantic approach is tied and influenced by previous research and by using a theoretical framework to explore the experiences of participants and the meanings ascribed to them which are found explicitly in the verbal accounts given. Through the analysis, it is possible to go beyond description by providing interpretation to theorise wider meaning and implications (Bailie et al.; Braun & Clarke). Such a realist epistemology sees the relationship between meaning, experience and language as simple and overt that lends itself well to a detailed exploration of a specific area of interest in a top-down, deductive approach (Braun & Clarke). A theoretical epistemology was chosen before any data was collected when planning and designing the study. The Biophilia Hypothesis states that humanity interacts with nature in nine ways (Kellert & Wilson, 1993), with this hypothesis used as the theoretical underpinning of the focus group research. This meant that the study and subsequent thematic analysis was theory driven as the research aimed to explore the routes to nature connectedness from the perspective of individuals who engaged with nature via biophilia. In order to avoid the main criticism that thematic analysis can be an unclear or incomplete methodology (Buetow, 2010), the analysis followed the methodological guidelines proposed by Braun and Clarke (2006): familiarisation with the data, transcript creation (see appendix 4.4, 4.7 and 4.10), re-reading of the transcripts, noting initial impressions, initial coding of the data, creation of themes (see appendix 4.11) and the thematic map, and naming of the super-ordinate themes.

Results and Discussion

It is acknowledged that due to participants not attending the focus group sessions, the size of the focus groups was not ideal, as typically focus group sample sizes range from between six to ten participants per group (Bloor et al., 2001). The study therefore represents an initial enquiry of the pathways to Nature Connectedness. It is important to note that the use of the nine values of biophilia will have focussed discussion towards set topic areas that may have affected the potential pathways emerging from the analysis. Given that nature connectedness is subjective (Zelenski & Nisbet, 2012) and that the potential pathways identified by the focus groups would help inform the quantitative research presented later in this thesis, it was important to structure the discussions around a framework that was wide enough to encapsulate the possible interactions with nature (and in turn the pathways), yet structured so as to identify potential routes that could then be expanded upon quantitatively as part of the wider systematic investigation. It was decided to use the nine values of the Biophilia Hypothesis, as the theory was originally conceptualised as encapsulating the possible interactions with nature by humanity (Kellert & Wilson, 1993). Given that theory and research was used to inform the focus group discussions, it is acknowledged that this may have led to some researcher influence to be present in the analysis and subsequent findings.

Focus groups contain an inherent researcher influence that is vital to the facilitation of the interaction data generated by a shared exploration of the focus group topic (Lehoux et al., 2006). This strengthens the data obtained as new insights can emerge on previously hidden aspects through group exploration (Lambert & Loiselle, 2007) that may be missed by other methods such as survey data (Itaoka, Saito & Akai, 2011). Being conscious of the impact a researcher's own subjectivity and prior assumptions may have on the research is still important however, so as to bracket such prior understandings to ensure that themes will emerge through the researcher being aware of, and open to new possibilities (Finlay, 2008). It is therefore acknowledged that the researcher's own perspective on nature connectedness prior to undertaking the research focussed on a positive emotional attachment to nature being a route to nature connection, based upon the researcher's own individual experiences. This prior experience and understanding, although bracketed by being constantly aware of its presence, necessitated the use of the nine values of biophilia as a framework to structure the focus group discussions; so that a wider scope of potential pathways could be explored, that went beyond a positive,

emotional attachment to nature. The thematic analysis initially generated thirty themes that were combined to form seven main themes from the focus group data with each theme exploring a potential pathway to nature connection from the perspectives of the 11 participants. The themes were: scientific enquiry of nature, engaging with the senses, creating idyllic nature, noting nature through artistry, conservation of nature, growing food and relating to wild nature.

Scientific enquiry of nature

The scientific exploration of nature was seen as a key factor in choosing to interact with nature that lead to the initial nature connecting experiences for some of the focus group members:

“Once you see the communities that live within a bush or a tree, it’s not just a tree, it’s a whole inter-connected web like nature connectedness. Nature itself is connected to everything else; nothing lives in isolation...for some it sparks, it did for me and it affected my entire life once I got my head around that and it can be a wonderful thing... [by] sweeping the grass for a few insects, a single drop of pond water on a microscope slide under a low powered microscope...” Ragnar, Focus Group 3

The study of nature through science was a catalyst for nature connection experiences, especially in childhood where *“it planted that seed that made me go further”* with these initial experiences informing vocational choices as *“now I’m a zoologist”*. The appreciation for nature that was instilled in them through a scientific investigation of nature impacted on the whole life of the individual and the choices they made. By engaging with their natural curiosity, the focus group members spoke of their love for exploring and investigating local nature, as there were *“loads of ponds up there and they were brilliant newt ponds so again we used to come home with newts in our pockets”*. However, they also spoke of their regret at doing this as *“if I look back on mine I wouldn’t do what I did do and that was bring it all home in jam jars”* as they felt partly responsible for the demise of at risk species. By applying scientific methods in their exploration of nature such as looking *“under a low powered microscope...look down a lens and it’s hundreds of little things swimming about...it’s amazing”* provided new insights and new worlds, hidden within the mundane. This fostered an appreciation and value for nature as

they went beyond a surface understanding to sense the connectedness inherent in nature through the newfound value they now possessed.

By engaging with nature through science, especially in childhood, an appreciation for nature and the interconnectedness between life (Auster et al., 2008) may have been formed for the participants. This insight was seen as a route to nature connection as the individual became aware of how they fit into a wider natural context and the role they can play both in harming or protecting the natural environment, with the new found value being the determining factor. This relates to the concept of deep ecology, where individuals value the richness and diversity of nature regardless of its potential for human use as humanity and nature are inter-related and part of the same community of life (Drengson et al., 2010; Naess, 1986).

Engaging the senses

Having an interaction with nature was seen as important in becoming connected to nature, as positive experiences were seen to encourage a connection. The way in which nature was interacted with was important, with the physical senses of touch and smell deemed more important than sight by some and the aesthetics it could provide:

“You draw your hand through (does so with a plant) like that in a mass of mint and then smell it; beautiful smell...if you just looked at it, you wouldn't get the smell so you've got to touch it” Don, Focus Group 2

By engaging with the physical senses, interactions with nature were heightened and a connection made as *“it just brings you closer to nature”* through natural smells and physical contact. The act of physically touching nature was seen as going a step further in their connection than simply passively looking at nature as *“you can see things but that's an entirely different thing to actually touching something”*. The desire to touch nature transcended the self into more than a passive observer by becoming actively engaged with their natural surroundings. Physical contact facilitated the release of smells in plants notably from *“lavenders and herbs”* in a *“really nice smelling corner of a garden”* creating pleasurable sensations that made them feel *“very peaceful and you can just chill out and lose yourself”*. It was also seen as a way of engaging people whose sight was limited as there are *“sensual gardens for sight impaired people”* so the act of smelling a fragrance was deemed to be accessible to most.

Through interacting with nature via touch, the sensation of closeness was achieved between the participant and nature. Physical contact alone was not enough for some of the focus group members as it became a means to acquire another sense important in becoming connected to nature: smell. Engaging with nature through the senses has been linked with restoration and nature connectedness (Ratcliffe et al., 2013; Richardson et al., 2015) with smell having been found to increase sensory perception when engaging with restorative natural surroundings that produces a sense of tranquillity (Kjellgren & Buhrkall, 2010). This fed into the restorative benefit of gardens, generated by the pleasurable smells and physical sensations it contained that created a deeper sense of connectedness and an intertwined garden-gardener identity (Freeman et al., 2012).

Creating Idyllic nature

When becoming connected to nature, the focus group members recognised that not all of nature would necessarily be connected to, as it was acknowledged that individual preferences for aspects of nature would alter how they might connect:

“Gardening; that’s how I lose myself. Even though it can be hard work, a lot of people don’t like it because it is hard work...when you see what you’ve achieved at the end of it then it’s great...it makes me feel good but...it doesn’t always make everybody feel good, it depends who you are yourself to some degree...I, tend to like different coloured leaves and sorts of flowers...with varying coloured leaves which can at a distance, look like flowers if you like so you’ve got the very pale leaves and then you’ve got the reds, the oranges so at a distance it can look like flowers...a natural looking garden...I don’t like formal gardens” Keziah, Focus Group 2

Personal preferences for nature led to the arrangement of natural spaces where moulding these spaces to conform to an ideal facilitated a connection through the restoration the space provided. It was made clear however, that individual preference might preclude some activities or aspects of nature from facilitating nature connection for everyone. The focus group discussions also turned to what constituted nature, feeling that it was very difficult to separate humanity and its creations (such as buildings or managed spaces) from biological nature, forming the view that *“we kind of divide natural things and manmade things and separate them...we are all part of nature as it is”*. This line of thought led to a discussion of the notion that an ideal or romanticised view of nature existed within society as the ‘cute’ and ‘attractive’ aspects of nature drew people in as

connections would form with some but not all aspects of nature “*we just want to see it nice an rosey and sweet and flowers and little bunny rabbits and buttercups...that’s nature but it isn’t, you know, you see whatever there is, is nature*”.

Preferring particular types of nature mirrors the perspective of Fox (1990) where interactions with nature that are perceived as positive allow for an experience of similarity, which is thought to lead to nature connection (Schultz et al., 2004). The preference for particular nature such as certain animal species has been documented previously, with larger size (termed charismatic megafauna), human attributes and particular colour providing appeal (Simaika & Samways 2010; Stokes, 2007). The focus group members felt that interacting with an idyllic form of nature would act as a route to nature connection, as for the majority of society, idyllic nature would be pleasing and so would be preferred; therefore being an appealing aspect of nature to connect to. Nature connectedness may therefore be based on preferences for particular aspects of nature, such as garden spaces (Freeman et al., 2012), with such natural environments selected based on their perceived restorative properties through fascination (Kaplan, 1995).

Noting nature through artistry

Being connected to nature leads to a desire to have direct experiences with the natural world that can be interpreted and shared through artistry such as photography or painting:

“It’s, you’re taking the picture like that because you don’t see it every day, it is something different and you’re taking pictures so you can show it to other people to say ‘look, I saw this yesterday, not seen one of these before” Don, Focus Group 2

Nature was seen as often being pushed into the background as even when people engaged with an outdoor physical activity nature was missed out: “*I’ve got an uncle who loves walking, but he cannot see the point in walking across a field; it’s always street walking...a lot of people sort of feel oblivious to [nature]*” Noticing nature was important in becoming connected, with novel often aesthetically pleasing nature capturing an individual’s attention. Once nature had been noticed, a connection would be experienced that could be preserved as “*they might take the sketch pad and sketch, paint*” or “*go out and take photos*”. The act of preserving the connecting experience was seen by some to inspire others to achieve their own connection to nature as it “*gets people out to visit the*

places that you see” as they become interested and encounter nature first hand. An alternative view saw artistry as serving a personal function “if you take a good photograph of something you’ll always remember; you’ll look it up in your book and think I remember that” as the experience of connecting with nature would be preserved and re-lived.

For participants, the visual appeal of nature had an influence on becoming connected to nature as beautiful or dramatic nature was novel enough to catch the eye of otherwise oblivious individuals. This relates to the finding that focussing attention intentionally through actively noticing nature led to an increased nature connection; with growth in nature along with finding beauty and wonder emerging as themes linked to nature connection (Richardson et al., 2015). While taking notice of nature is important, it was the result of taking notice that the focus group members saw as being the important factor in connecting to nature. By having a photograph or painting, the interaction with nature was remembered and facilitated the reliving of the connecting experience. It was the preservation of the scene that was an important factor for the participants, as this was seen to not only inspire the keeper of the scene in a photograph or painting, but also those who viewed it as they would want to have a similar experience of their own; which may relate to preferences for nature through fascination as described by Kaplan (1995).

Nature conservation

One of the most frequently discussed themes that emerged from the focus group discussions was that of the negative impact humanity had upon nature; this created a need to become involved with some form of practical action to make amends:

“Our actions which will alter what happens to the Earth. We can’t do all the things that we’ve done and not have any effect I mean the reason we have floods in places because we take away the tree’s, build things on the floodplains, pushes the water out of other areas so we alter our own environment. We’re altering it in this case for the worst but we have the ability to alter it for the better” Colin, Focus Group 1

Humanity was seen as not only separate from, but also as an enemy of nature with the prevailing opinion that *“humans are the worst thing on this planet”* stemming from the irresponsible use of nature by wider society. But there was contention within the group as some felt that despite knowing that the current exploitation of natural resources

could not continue, changes in their own behaviour could make little difference “*I still go down to the shop...but everyone does, you still go down to the shop and there’s fish there*”. This was a view not held by all as others had made a choice and felt that their actions would be the start of change “*there’s everything there but there are people who have made a choice, like I’ve chosen to abstain from eating fish*”. Taking practical action was important as the participants wanted to make a difference in protecting nature as “*they’ve had a tough time so I think any help that they get from us is needed*” especially in “*improving our environment in England; protecting our species*” as protecting local nature was considered a high priority. By acting to conserve nature, especially local natural spaces, an emotive connection would form towards the conserved natural entity.

As a species, humans were perceived to destroy natural habitat and other organisms purely for selfish gain. It was acknowledged that even possessing pro-environmental attitudes and knowledge did not necessarily lead to pro-environmental behaviours, despite such attitudes being a component of connection to nature (see Mayer & Frantz, 2004). Participating in activities that benefited local nature were crucial for the participants in turning pro-environmental attitudes into positive action that would then work to increase an individual’s connection to nature. This supports the finding that protecting nature may lead to an awakening of a personal nature connection (Lewis & Townsend 2014). There was also a sense of ownership of local spaces from a selection of the participants, which lead to a desire to protect the local habitat through practical action; supporting the notion of place attachment in creating pro-environmental behaviours (Scannell & Gifford, 2010a; 2010b).

Growing food

Living in modern urban environments was seen as isolating an individual from nature as a lack of any practical reliance on what nature provides caused a disconnection:

“Everything we want and need in the supermarket or we’ve got a house and all that sort of thing and city, if you go to the rural you have to nurture it whereas you don’t in the city because someone else is doing it for you. So the people in the city don’t think about nature too much because they don’t have to...we’re busy doing other things” Colin, Focus Group 1

Humanity was seen as removed from nature, as the fast pace of urban life leads to a reliance on convenience for food and other needs, leading to a disconnection as a lack of reliance on nature leads to low appreciation for the natural world as *“if you’ve got all this that can take away from your feeling of connectedness to nature”*. The disconnection from nature stems from a lack of appreciation for what nature provides as individuals *“are less concerned about what happens to nature”* and was especially prominent in children as *“they don’t know that sheep or cows provide our food...they thought cheese grew on trees, they had no idea”*. Engaging with a natural process such as growing *“a lot of stuff which they eat and cook”* was perceived to increase nature connectedness as the value of nature increased because *“you cared about nature”* and invested time into growing the food. There was hesitation over a complete abandonment of the gains made by modern living *“it also allows you to do a lot of things that society has become reliant on”* and so a wholesale *“pitching in and just growing food and stuff”* was not required to facilitate nature connectedness.

A reliance on urban conveniences was seen to provide a higher quality of life but at the same time reduced the connectedness individuals felt with the nature around them. For the focus group members, the main factor to increase nature connection was to become involved hands on with some form of nature based process. This relates to previous research on allotment space being perceived to reconnect the individual to nature by providing an opportunity to act within it (Hawkes et al., 2013) with the food produced, and then consumed by the individual out of a desire to feel more connected (Holloway & Kneafsey, 2004). There was disagreement over the complete dedication to being involved in natural processes, but participants agreed that growing food on a small scale would provide a connection without diminishing the gains an urban lifestyle afforded them. This notion is supported by Light (2000) where city living that encourages diversity (both cultural and biological) can encourage a deeper connection to nature, with nativism not necessary to have a positive co-existence with nature.

Engaging with wild nature

The relationship that forms as a result of having a connection with nature was seen as lifelong with some focus group members being unable to remember a time when they weren’t connected to nature. The relationship was described as fundamental to the self, a requirement for living:

“You probably see a bird that you only see occasionally and you’re with someone else and you mention ooh, it’s a nuthatch...I do feel, if you like not alone and that you are a part of something...that I would feel that half of me was missing if there was no nature you know, and I definitely feel that I’m one of those people that need it” Scarlet, Focus Group 3

The sense of companionship was an enduring bond that developed through positive interactions with animals and wider nature as the individual felt a sense of similarity with a specific aspect of nature. The focus group members expressed this similarity in the form of emotional attachments *“I would fight for animals...because Orangutans are endangered and in crisis”*, anthropomorphism *“a chimp...we’re the closest in sort of intelligence level...so that’s probably the thing I value the most”* and scientific similarity *“they’ve all got the same bones as we have; they’re from a common ancestral origin”*; all three routes were seen to enable a relationship to be formed with a natural organism and developed through positive interactions. Pet ownership was not capable of facilitating a connection with nature as the focus group members felt *“that having a pet is being connected but I personally don’t feel that way”* as the process of domestication meant the animal was no longer subject to the natural order and were almost human themselves as they *“eat out of the cupboard like I do”*. By being *“close up to a wild animal”* that was not *“outside of the natural order”*, a connection to nature could be achieved by forming a relationship with undomesticated nature.

Having a relationship with nature was an important aspect of an individual’s self-concept (Schultz, 2001) that helped to foster a sense of commonality with wider nature (Schultz et al., 2004). This was facilitated through emotional attachments (an important aspect in pro-environmental attitudes, Mayer & Frantz, 2004), and perceiving a shared genetic heritage and equal value of all life (Drengson et al., 2010; Fox, 1990). A contradiction did exist as humans were still perceived to be separate from nature (Haila, 1999; Vining et al., 2008) so any area of nature touched or subject to large scale human influence such as domestication of animals was perceived to be against the natural order and so could not facilitate nature connectedness. From this perspective, anthropomorphising nature (Tam et al., 2013) was therefore not conducive for nature connectedness as only engaging with wild animals was a route to connectedness, given that they retained their natural status by being free from human influence. It is worth

noting that the discussions only related to the anthropomorphism of animals as fauna or natural spaces were not explored; therefore further investigation of the anthropomorphisation of other natural entities and nature connectedness is needed.

Discussion

The themes emerging from the thematic analysis propose seven potential pathways which could lead to an individual becoming connected to nature. The potential pathways are summarised in table 4.2 along with an approximate mapping to the values of biophilia. While the Biophilia Hypothesis was used as a framework to cover the breadth of human interactions within nature for the focus group discussions, there are distinct differences between the seven potential pathways and the nine biophilic values. This does not discredit the nine biophilic values in any way, rather the seven pathways represent the activities that led to a positive relationship with nature for the participants and may be the result of the differing conceptual approaches of biophilia and nature connectedness. Additionally, it is important to recognise that some degree of overlap exists between the pathways themselves, and that the mapping of biophilic values is therefore only approximate; given that a biophilic value may be related to more than one of the pathways due to a shared overlap that is not indicated in table 4.2.

Table 4.1: The Seven Pathways to Nature Connectedness

Biophilia	Pathway	How Nature Connectedness is Facilitated
Mapping		
Ecologicistic- Scientific	Scientific enquiry of Nature	Through an appreciation of the interconnectedness of all life, (including humanity) by investigating nature using scientific methodology
Naturalistic	Engaging the senses	Engaging the senses including touch, sound and smell to feel deeply connected with nature
Dominionistic	Creating idyllic nature	Shaping natural spaces to become more in line with a personal ideal that facilitates restoration
Aesthetic	Noting nature through artistry	Actively taking notice of nature to experience nature connectedness and preserving the experience through artistic expression
Moralistic	Conservation of nature	Protecting local natural environments from human caused harm leading to an emotional attachment for the conserved habitat
Utilitarian	Growing food	Appreciating nature by nurturing and growing produce that is eaten to increase the value held for nature
Humanistic	Engaging with wild nature	Forming an emotional attachment to non-domesticated, wild animals through a sense of similarity achieved through positive interactions

The Seven Potential Pathways to Nature Connectedness & Biophilia

The Biophilia Hypothesis asserts that human interactions with nature result from an innate need to affiliate with life through the nine values (Kellert & Wilson, 1993). While the nine values were utilised as a framework for the focus group discussions, they did not directly map onto the seven potential pathways identified by the thematic analysis. The utilitarian value places an emphasis on the practical use of nature and while the growing food pathway advocated the production of food, sustenance was not the end goal; rather it was always out of a desire to feel closer to nature. Creating idyllic nature was comparable to the dominionistic value as both advocated a control over natural spaces. Yet by shaping nature to be personally ideal, a connection came from the restoration this provided, through the natural space being similar to nature that was not born from a desire to dominate natural spaces despite it being a form of control over nature. The humanistic value was similar to the engaging with wild nature pathway as an emotional bond formed with animals, but the value's focus on animal companionship differs from the pathway as companion animals were too domesticated and could not facilitate nature connectedness. Noticing nature due to its visual appeal was shared by both the aesthetic value and the noticing nature through artistry pathway. While the aesthetic value sees visual appeal as a mechanism for survival, the pathway instead emphasised the role of inspiration and awe of nature as creating a desire to preserve the resulting experience of nature connectedness rather than explicitly focussing on the survival benefits that natural aesthetics provide.

Although some of the pathways contained noticeable differences from the values of biophilia, there was a direct comparison between two pathways and the biophilic values. Through the conservation of nature, ethical judgements were employed to protect nature and formed a connection with the local environment. The desire to protect natural spaces expressed in the conservation pathway are similar to the moralistic value, with both placing the ability to affiliate with nature through moral reasoning as an important factor for the relationship with nature. The ecologicistic-scientific value linked directly to the scientific enquiry pathway. Both placed an emphasis on the study of nature that lead to an appreciation for the interconnectedness within natural systems. The only difference between the two is the overall function; the biophilic value emphasises further understanding as a means to an end whilst the pathway leads to an experience of nature connectedness through scientific investigation.

However, not all of the nine values relate to the seven pathways identified, as the negativistic, naturalistic and symbolic values have no direct comparison. This may be due to the naturalistic value representing direct contact with nature through outdoor skills and while an engagement with nature is present in the seven pathways, contact was not always necessary. Neither an expression of ideas through nature nor an aversion to nature was seen as a path to nature connectedness. Whilst it is unsurprising that an avoidance of nature would not be a pathway to connectedness, the lack of symbolic language in any of the pathways was unexpected and warrants further exploration.

The Difference between Biophilia & Nature Connectedness

Given that not all of the nine values of biophilia mapped directly onto the seven possible pathways identified within this chapter, it can be argued that biophilia and nature connectedness are different constructs; while the potential pathways have some links to the biophilic values through the mapping in table 4.1, they are distinct from them. Biophilia suggests that humanity has an innate tendency to affiliate with nature (which is a separate entity) because doing so provided survival opportunities (Frumkin, 2001; Kellert & Wilson, 1993; Windhager et al., 2010). As a consequence of our evolutionary advancement, the perception that humanity was set apart from nature emerged, which influenced the prevailing view in western cultures of the uniqueness of humanity (Catton & Dunlap, 1978), and along with technological innovation, contributed to the (false) view that humanity no longer relied on nature. However, despite technological advancement, humanity has never stopped being a part of nature (Kahn & Hasbach, 2012) as the Biophilia Hypothesis' framing of nature as a separate entity would imply. In contrast, nature connectedness is more than an innate need to affiliate with a separate other; it is the recognition that humanity is already a part of nature. Therefore, nature connectedness can be considered a re-connection with a lost part of self; given that nature becoming part of the self-concept is suggested to be necessary in connecting with nature (Mayer & Frantz, 2004; Schultz, 2001). For the focus group participants, becoming connected to nature was a realisation that humanity is part of an interconnected web of life, which emerged in the scientific investigation of nature theme. Connecting to nature was also an act of self-realisation of the similarity between other aspects of nature and the individual (Schultz et al., 2004); which in the focus groups was brought on by engaging with wild nature and through the conservation of local nature to which the participant had become attached to.

Engagement with Nature and Connectedness

Previous research has found that by actively engaging with nature, connectedness could be facilitated (Martin, 2004; Nisbet et al., 2009; Zelenski & Nisbet, 2012). Engaging with nature was a component to nature connectedness for the focus group members but becoming connected required contact with nature via the specific pathways rather than general contact as advocated by previous research. Contact with nature during childhood has been proposed as particularly important as a predictor of nature connection and continued interactions with the natural world in adulthood (Muller et al., 2009). This was supported by the scientific enquiry of nature and growing food pathways as both advocated the importance of engaging with nature specifically during childhood.

Limitations and Future Research

While focus groups are a valid method of qualitative exploration, the results only represent the perspective and experiences of eleven individuals and their own personal connection to nature. The data obtained provides an initial examination of seven potential pathways to nature connectedness but further empirical investigation is required to not only refine those pathways already identified, but to also expand upon them, given that other potential pathways may not have been identified given the structured nature of the focus groups and small sample size of the study. Future research could do this through a theoretical investigation of the potential pathways, by investigating the nature-based activities individuals engage in and relating this to their level of nature connection. This could then lead to a refinement of the possible seven pathways while also adding further routes to nature connectedness. Additionally, some of the pathways identified in this chapter may not in fact lead to a connection with nature on a larger scale; something which a theoretical investigation would help to identify. Ideally, any pathways identified ought to be tested, whereby their effectiveness at increasing nature connectedness could be evaluated. It is envisioned that as an intervention, the potential pathways would not operate in isolation (given the possibility of shared overlap) and thus would have to be enacted in concordance with one another. Activities or interventions could be designed to facilitate nature connectedness where the potential pathways are represented within the activity engaged with; thereby lending further support to the notion of optimal pathways to nature connection.

The Seven Pathways to Nature Connectedness

The utilisation of the focus group methodology to explore the pathways to nature connectedness, structured around the nine biophilic values has not been conducted before and contributes to understanding how nature connectedness occurs. The perspectives of the focus group members who engaged with nature through biophilia highlighted seven potential pathways for engaging with nature that, for them, facilitated connectedness. By engaging with nature through the seven pathways, the focus group members formed a connection to nature as nature became a part of their self-concept (Schultz, 2001). Previously, anthropomorphising nature (Tam et al., 2013) has been linked to nature connectedness as a process of perceiving similarity through ascribing human qualities to nature. The requirement of engaging with wild nature, one where human characteristics are absent for the focus group members, did not support this link as it was the animal's own characteristics and not those considered to be human that were important. A connection to nature was facilitated instead through childhood experience (Muller et al., 2009) by growing food and investigating nature through scientific enquiry. Noticing nature (Richardson et al., 2015) through the senses and artistry and caring for plants (Freeman et al., 2012) when creating idyllic natural settings and through protecting local environments also led to nature connectedness.

While there were similarities between nature connectedness and six of the nine values of Biophilia, nature connectedness is more than an innate need for nature; it is rather a realisation that there is no divide between humanity and nature, an acceptance that as a human being, you are an interconnected natural organism. The seven pathways reveal a varied range of routes to engagement with nature through scientific enquiry, by engaging the senses, in creating idyllic nature, by noting nature through artistry, through the conservation of nature, by growing food and through engaging with wild nature. The identified pathways may lead to the formation of an individual's connection to nature which in turn, may potentially facilitate the reported benefits associated with nature connectedness; increased subjective wellbeing and the enactment of pro-environmental behaviour.

Chapter Summary

This chapter described the seven pathways to nature connectedness from the perspective of 11 individuals who engaged with nature via at least one of the nine values of biophilia. In doing so an exploration of how the nine values of biophilia and nature connectedness are related was achieved (aim 1), as well as an examination of the potential pathways that may lead to a connectedness with nature (aim 2). In chapter two, the reductionist method was highlighted as being one driver of the perceived separation between humanity and nature in westernised societies, due to its focus on the simplest explanations that avoid the whole while generalising nature rather than identifying its uniqueness (Bateson, 2002). Therefore a reductionist methodology that reinforces separateness would not meet the aims or purpose of this thesis effectively. The use of a thematic, qualitative methodology avoided the above criticism of the reductionist method; however by only exploring the larger experiences of nature connectedness from a select few, the mechanisms involved in connecting with nature may not be fully explored. What is needed is a holistic approach that accounts for the complexity of empirical phenomena that include not only the components but also the interrelated whole as well; an approach known as holism (Mittlestrass, 2014). This does not preclude a reductionist approach, rather avoiding concentrating exclusively on simple explanations by employing one that is adaptive in its approach by considering alternate explanations through an understanding the data within a gestalt whole (Bateson, 2002). The first stage of the holistic approach being employed in this thesis has been completed by examining the potential pathways to nature connectedness as a whole in the research presented in this chapter. This approach will be continued through a quantitative enquiry that investigates the mechanisms which underpin these nature connection experiences in chapter five onwards, before ultimately returning to qualitative accounts of the pathways as a whole in chapter eight.

Chapter Five – Beyond Knowing Nature: Contact, Emotion, Compassion, Meaning and Beauty are Pathways to Nature Connection

In chapter four, seven potential pathways to nature connectedness emerged from the Thematic Analysis of the three focus groups. The potential pathways were; a scientific enquiry of nature; engaging the senses; creating idyllic nature; noting nature through artistry; nature conservation; growing food; engaging with wild nature. The pathways identified in chapter four are a useful initial exploration of the potential pathways to nature connectedness but given that they emerged from three focus group discussions from 11 participants, a more thorough investigation is required. The following chapter presents two online surveys (both informed by the initial seven pathways and structured around the nine values of biophilia) that investigated the nature based activities individuals engaged with and their connectedness with nature in order to produce a theoretical model of the pathways to nature connectedness.

Introduction

There is a growing realisation that a positive, connected relationship with nature leads to pro-environmental attitudes and wellbeing benefits (McMahon & Estes, 2015; Nisbet & Zelenski, 2013; Sandifer, Sutton-Grier & Ward, 2015). Having a positive relationship with nature is an important part of wellbeing, comparable to established factors such as income and education (Capaldi et al., 2014). Just as individual benefits are important, nature connectedness can also lead to pro-environmental attitudes and subsequent behaviours through a willingness to sacrifice (Davis et al., 2011). While the relationship between connectedness with nature, wellbeing, and pro-environmental attitudes have been frequently demonstrated, the specific routes to connectedness are still unclear; a full investigation into the actions and practices that lead to a connected relationship are required (Zylstra et al., 2014). This is especially important given that large charities in the United Kingdom (UK) including the Royal Society for the Protection of Birds (RSPB), the Wildlife Trusts and the UK branch of the World Wildlife Fund are changing their focus. Where such organisations have engaged individuals using education in the past (where the focus is on knowledge and identification of species), there is now a

focus on identifying the best frames and values to use in order to engage the public and encourage a connection to nature (PIRC, 2013). The present chapter identifies these routes by going beyond simple exposure to nature while downgrading commonly used activities that engage people with nature through knowledge and identification.

Being able to identify the different activities associated with a connection with nature is also a good starting point for developing a theoretical account of the pathways to nature connection. While potentially problematic, given that connectedness with nature is subjective, formed through individual experiences (Zhang et al., 2014; Zelenski & Nisbet, 2012), a suitable starting point exists within the Biophilia Hypothesis (Kellert & Wilson, 1993). The nine values of biophilia describe how humanity affiliates with nature (see table 2.1 in chapter two). Biophilia has been suggested to function as the innate biological driver for the desire to connect with nature and possibly for the benefits to wellbeing that relating to nature provides (Zelenski & Nisbet). As such, the nine values of biophilia and the activities associated with them serve as a suitable starting point for a systematic investigation of the pathways to nature connectedness.

Biophilia and the Possible Routes to Nature Connectedness

Research into nature connectedness has placed an emphasis on direct experiences with nature that lead to an affective and/or cognitive relationship to form (Beery & Wolf-Watz, 2014). The type of activity engaged with may be vital to how nature is perceived and whether a connection is formed; thereby leading to a repeated engagement with nature and facilitation of connectedness, along with any associated benefits to humanity's and nature's wellbeing. Environmental connectedness (a sense of belonging to the natural landscape) is positively related to engaging with nature through bird watching and gardening (Beery, 2013). Outdoor pursuits such as hiking and camping (Martin, 2004) and walking in natural settings (Mayer et al., 2009) are also suggested to lead to an increased nature connection. The aforementioned activities include elements of a physical engagement with nature and so mirror the naturalistic value of Biophilia that places an emphasis on outdoor skill development and contact (Kellert, 1993).

An emotional attachment to nature may also form through the anthropomorphising of nature. Anthropomorphism may be important for including nature within the self as it

is the 'cognitive mechanism' for developing a biocentric ethos (Vining, 2003). As natural elements are humanised, feelings of similarity and empathy are suggested to form (Tam et al., 2013). This emotional attachment to nature is also crucial to the formation of connectedness and feeling part of the natural world (Mayer & Frantz, 2004), similar to the humanistic value of biophilia; an attachment for nature born out of a love for life often through an attachment to animals (Kahn, 1997). Such emotional attachments to nature may also be influenced by childhood exposure to nature (Hinds & Sparks, 2008), that endures as a stable trait or subjective connection to nature (Capaldi et al., 2014). While childhood experiences are important, anthropomorphism can still act as a route to connectedness with nature in adult populations (Tam et al.) further indicating that childhood exposure is but one possible (albeit, important) route to nature connectedness. Beyond a love for animal life, humanity has a preference for aesthetically pleasing nature (Kaplan, 1987) which is unsurprising given that from an evolutionary viewpoint, survival would occur by directing a large amount of attentional resources to the visual cues within the environment, that would be aided by an affiliation with life (Capaldi et al., 2014). While aesthetics is an important part of biophilia, the visual appeal of nature is also important for connectedness with nature. Aesthetically pleasing natural landscapes have been shown to mediate the relationship between nature connectedness and wellbeing (Zhang et al., 2014) as the beauty of nature acts as a 'good thing' in nature (Richardson et al., 2015).

Through an observation of nature, a connected self can be realised through the use of symbolism that creates positive schemas about nature and the connected self (Feral, 1998). The use of symbolism is thought to enhance the experience of connectedness with nature by expanding an awareness of nature; leading to a deeper relationship or connectedness (White, 2012). While nature based symbolism is frequently used in most languages, it is no more frequent than non-nature metaphors but is still nonetheless an important value of biophilia, as it is a significant part of culture (Kahn, 1997). Symbolism may therefore be a route to nature connection by providing a means to express the transpersonal experiences in a more than human world that connecting with nature provides (Zylstra et al., 2014). Thus far, connectedness with nature has been described as a cognitive and affective construct with aspects of personality and experience. A connectedness with nature is often seen to be responsible for the creation of an environmentally responsible individual as connectedness is linked to the possession of

pro-environmental attitudes (Davis et al., 2011; Mayer & Frantz, 2004), and found to predict pro-environmental behaviour (Zelenski & Nisbet, 2012). Evidence is emerging for the role threats to nature play in ‘awakening’ a personal bioethic. Such individuals describe the desire to protect nature from human threats as a facilitator of their own personal connection with nature (Lewis & Townsend, 2014). The conservation of nature through an ethical obligation is contained within the moralistic value of biophilia (Kahn, 1997; Kellert, 1993), suggesting that the desire to protect nature may not be a result of connectedness solely, but a route to connectedness in its own right. Wilson (1992) suggested that a close identification with the diversity and interconnectedness of non-human life is a route to human sensibility and an enduring ethic and sense of direction for humanity as part of nature. This position also provides the opening foundation for Compassion Focussed Therapy (Gilbert, 2014), as compassion for nature, rather than morality and ethics, might be a more accessible framing and fruitful route to nature connection.

The use, control or avoidance of nature that the utilitarian, dominionistic and negativistic values entail, lay the foundation for the dominion over and exploitation of nature (Kahn, 1997). This is contrary to an equal value for all life emphasised by connectedness with nature (Schultz et al., 2004), making it unlikely that activities involving a use of, or avoidance of nature will lead to nature connecting experiences. Activities that focus on knowledge and identification of nature have been used in attempts to encourage a connectedness to nature (Ernst & Theimer, 2011; Lieflander et al., 2012) that is similar to the ecological-scientific value. While the investigation of the natural world does not explicitly advocate mastery over nature, the lack of evidence of sustained increases in connection to nature through environmental education programmes suggests activities purely focussing on knowledge and identification may not be pathways to nature connectedness. This was recently supported in a study by Bruni et al., (2015) where creative arts based activities rather than educational nature trails were associated with increases in implicit nature connectedness.

Summary

An overlap exists between activities that have been found to facilitate nature connectedness and the humanistic, symbolic, moralistic and aesthetic values of the Biophilia Hypothesis. While the links between connectedness with nature, wellbeing and

pro-environmental attitudes have been examined frequently, the specific pathways to connectedness are still unclear. The positive effect of connecting with nature has been clearly evidenced but if individuals or wider society do not walk the path to connectedness, the mutual benefits of a connected relationship cannot be brought to bear. The activities leading to a connectedness with nature need to be investigated (Zylstra et al., 2014) so that humanity and the natural community to which it belongs can benefit. To this end, two research studies are presented, each utilising the values of the Biophilia Hypothesis as a framework to investigate the routes to nature connectedness.

Study One

Method

Design

An online survey was employed to investigate the routes to nature connectedness. It was predicted that activities focussed on humanistic, naturalistic, symbolic, aesthetic and moralistic values would all act as pathways to nature connectedness.

Participants

A power calculation using Gpower (Faul, Erdfelder, Buchner, & Lang, 2009) based on the number of predictors indicated that a minimum of 166 participants were needed for the study. Participants aged 18 and over were recruited through snowball sampling via social media accounts and through the University of Derby participant recruitment microsite, creating a sample consisting of 70 students and a further 133 individuals from a non-student population. A total of 203 participants took part in the study, with age ranging from 18 to 66, with a mean age of 36.90 (13.16 *SD*). Participants were predominantly female (145) with 175 participants residing in the UK.

Measures

The Nature Relatedness scale (NR) is a measure of an individual's trait connection to nature. During scale development and testing, the measure was linked to biophilia and positively correlated with time spent outdoors (Nisbet et al., 2009). NR contains 3 factors: self ('I am very aware of environmental issues), experience ('I don't often go out in nature') and perspective ('I think a lot about the suffering of animals'). All 21 items are measured on a 5 point Likert scale of 1 (*disagree strongly*) to 5 (*agree strongly*). An

average score is calculated from all 21 items (after reverse scoring) and has good reliability ($\alpha = .87$). The *Connectedness with Nature scale* (Mayer & Frantz, 2004) was also administered in this study but given the link between biophilia and the Nature Relatedness scale (Nisbet et al.) and the positive correlation between the two measures in this study ($r = .77, p < 0.01$), only the Nature Relatedness results are included in this thesis.

Nature Activities and Values, One of the main critiques of biophilia is that testing the rubrics of the hypothesis directly is often difficult (Kahn, 1999). A deep connection to nature (such as that which the Biophilia Hypothesis would propose) should equate to a greater engagement with specific nature-based activities and a greater experience of nature connectedness. One way of testing biophilia directly would be to examine the level of engagement with nature based activities structured around the nine values that biophilia proposes. A total of 27 activities were selected from an initial 45 (see appendix 5.2) that were based upon the description of each of the biophilic values suggested by Kellert and Wilson (1993), with content validity assessed by eight individuals with an academic knowledge of the Biophilia Hypothesis. This involved providing Kellert and Wilson’s original definitions of biophilia alongside the items which were unattached to any value and randomly ordered. The academics were tasked with assigning each of the items to a biophilic value or to no value at all, with the overall assignment made by the academics dictating which items were used for each value. The final 27 activities used the nine values as a framework with three activities per value, with each activity rated on two scales (see table 5.1). The first, a 6 point ordinal scale of how often the activity was performed, ranging from 1 (*never*) to 6 (*several times a week*), the second a 5 point ordinal scale to indicate the value placed on the activity, ranging from 1 (*no value*) to 5 (*very valuable*).

Table 5.1: Post Validation Activities Relating to the Values of the Biophilia Hypothesis

Biophilic Value	Activity Statement
Utilitarian	Tending to fruit or vegetables that you intend to eat Catching an animal for the purpose of eating it e.g. fishing, hunting etc. Collecting or chopping wood for fuel

Naturalistic	<p>Enjoying a sensory experience of nature e.g. listening to birdsong, smelling wild flowers etc.</p> <p>Going bird or nature watching for leisure rather than scientific reason's</p> <p>Watching a sunrise or sunset for more than a minute</p>
Ecologicistic-Scientific	<p>Finding out more about an insect or other small animal</p> <p>Studying nature with some apparatus e.g. a microscope, a nature survey, binoculars etc.</p> <p>Drawing a scientific diagram of nature e.g. the anatomy of an animal a plant cell etc.</p>
Aesthetic	<p>Going to a natural place just to look at it e.g. visited hills to appreciate the view</p> <p>Looking at sculptures or pictures of large animals</p> <p>Taking a photograph or painted a picture of a natural view e.g. of hills, rivers etc.</p>
Symbolic	<p>Using nature to represent an idea</p> <p>Thinking about the meaning of natural icons e.g. the green man, mother nature etc.</p> <p>Thinking deeply about the meaning of signs within nature e.g. the first flowers of spring, the first swallow of summer etc.</p>
Humanistic	<p>Feeling a deep emotional attachment to wild nature</p> <p>Having a conversation with others about your thoughts and feelings about nature</p> <p>Thinking about an animal you know when you are not with it e.g. at work**</p>
Moralistic	<p>Making ethical food or product choice e.g. free range eggs</p> <p>Being moved by a programme on animal welfare e.g. the great fish fight, intensive farming etc.</p> <p>Thinking about the treatment of nature e.g. animal welfare, protecting greenbelt land*</p>
Dominionistic	<p>Going rock climbing or caving</p>

	Using vehicles in a natural place for sport e.g. quad biking, cross country driving, motocross
	Controlling pests within your garden or other green-space**
Negativistic	Staying in town rather than visiting a local park or green- space
	Using a computer rather than a green space for leisure
	Avoiding areas of wilderness or woodland

*Denotes an item removed to increase reliability as indicated by the Cronbach alpha when participating in the Biophilic activities

**Denotes an item removed to increase reliability as indicated by the Cronbach alpha when participating and valuing the Biophilic activities

Kellert and Wilson (1993) intended for each of the nine values of biophilia to be discrete from one another, something which the research presented in this chapter attempted to replicate through the validation conducted; whereby each item was assigned to one of the individual biophilic values. It is important however, to acknowledge the overlap between the items selected to represent each of the values. While every effort was made when creating the items to draw upon each value in turn as a discrete entity by referring to Kellert and Wilson's original work, items such as "going bird or nature watching for leisure rather than scientific reason's" could potentially have qualified for the aesthetic value rather than being included as a naturalistic item. While it was intended for the validation process to minimise this possibility (as it was conducted by individuals familiar with the Biophilia Hypothesis), the exercise still drew upon individual subjectivities, as did the creation of the items in the first instance by the researcher. This may have led to items being assigned to one value when, depending on the individual engaging with the activity, could be an expression of a different value than the one to which it had been assigned. For example items such as "tending to fruit or vegetables that you intend to eat" or "going rock climbing or caving" which were placed in the utilitarian and dominionistic values respectfully, could potentially have been activities that could for some, be considered naturalistic due to the aspect of a direct engagement with nature which they provide. This discrepancy is reflected within the literature, as in some cases rock climbing has been linked with a desire for control or mastery (Kiewa, 2001) while also being linked to feelings of unity and freedom (Lester, 2004). Every effort was made to ensure each item was assigned to the correct value through the validation, with items blindly assigned

without any foreknowledge of which value each item was originally created for; with each item's final placing based on the overall consensus of the eight validations. When interpreting the results of the analysis, it should be remembered that there exists the possibility of an overlap between the biophilic values through the items used to represent them; therefore a small degree of caution should be used when interpreting any potential routes to nature connectedness identified by the analysis.

It is also worth noting that due to the need for each activity to be feasibly enacted on a regular basis, many of the items created utilised activities that would be considered general in their scope. It was difficult to identify very specific activities that would qualify as an exemplar of the value given that the biophilic values, while providing some descriptors of what does and does not constitute the value in question, are on the whole broad in scope rather than specific. Additionally, it was decided prior to creating the items that each activity selected would need to allow for a wide range of individuals to take part in the activity. While the subsequent analysis would benefit from utilising very specific activities within the measure, the need for activities that were accessible, could potentially be enacted on a regular basis, while still capturing the ethos of the value of biophilia which they represented, meant that the activities selected were general in their scope rather than specific.

Procedure

Participants were recruited online using social media invitations and the University of Derby participation recruitment system to take part in the study. Upon visiting the linked webpage, participants read a combined brief/consent form (see appendix 5.3) that included their right to withdraw, instructions to do so and the creation of a unique identifier to ensure confidentiality. Participants first entered their demographics, followed by the twenty-seven activities presented in a random order to stop activities relating to the same biophilic value from clustering together. To limit any priming, the Nature Relatedness scale was then administered after the participants had completed the activity section (for the full questionnaire pack see appendix 5.4). Once all pages had been completed, a final debrief was shown (see appendix 5.5), with participants given 3 weeks after completing the study to withdraw by email. The data was then downloaded once the study was finished by the researcher and inputted into SPSS version 19.

Results

Reliability of the Two Nature Activity Measures

The measures created to assess the potential activity pathways were examined using Cronbach's alpha to determine the reliability of the nine scales with each initially consisting of three items. While a cut-off of .7 is widely reported as an acceptable reliability, a set alpha level for acceptability does not exist given that levels perceived as low can still be useful indicators (Schmitt, 1996). Instead, context is more important than arbitrary cut offs (Cortina, 1993) and it was decided that all subscales would be included in the analysis in order to cover the full range of human interactions with nature that biophilia provides, thereby not missing any potential pathways to nature connectedness. It is important to note prior to the analysis that it was decided that any subscale lower than .5 would be interpreted with caution when discussing the results.

The participation subscales for aesthetic ($\alpha = .63$), naturalistic ($\alpha = .71$), utilitarian ($\alpha = .32$), negativistic ($\alpha = .54$), ecologicistic-scientific ($\alpha = .64$) and symbolic ($\alpha = .76$) could not be improved through the removal of any items. A single item was removed to increase the reliability of three of the subscales; the items removed are noted in table 5.1. The three subscales had the following Cronbach alphas: dominionistic ($\alpha = .38$), humanistic ($\alpha = .83$) and moralistic ($\alpha = .57$).

The subscales for the value of participating in a nature activity for aesthetic ($\alpha = .64$), naturalistic ($\alpha = .73$), utilitarian ($\alpha = .49$), negativistic ($\alpha = .53$), ecologicistic-scientific ($\alpha = .74$), symbolic ($\alpha = .78$) and moralistic ($\alpha = .52$) could not be improved through the removal of any items. A single item was removed to increase the reliability of the following subscales (see table 5.1), that increased reliability: dominionistic ($\alpha = .47$) and humanistic ($\alpha = .78$).

Nature Activities & Nature Connectedness Correlations

Taking part in aesthetic activities was positively related to nature connectedness, ($r = .61$), as was naturalistic, ($r = .63$), utilitarian, ($r = .32$), dominionistic, ($r = .44$),

ecologistic-scientific, ($r = .49$), humanistic, ($r = .70$), symbolic, ($r = .63$) and moralistic, ($r = .49$) which were all significant (all $p = .001$). Only the negativistic value was negatively related to nature connectedness ($r = -.36$), which was significant ($p = .001$). The value attached to engaging with aesthetic activities was positively related nature connectedness, ($r = .54$), as were the naturalistic, ($r = .62$), utilitarian, ($r = .30$), ecologistic-scientific, ($r = .40$), humanistic, ($r = .66$), symbolic, ($r = .52$) and moralistic ($r = .55$) which were significant (all $p = .001$). The value of engaging with dominionistic activities was related to nature connectedness ($r = .05$) but was non-significant ($p = .263$). The negativistic value was negatively related to nature connectedness ($r = -.14$), which was significant ($p = .022$).

Participating in Nature Activities & Nature Connectedness Regressions

The mean nature connectedness score was 3.80 ($.62$ *SD*) with a minimum score of 2.05 and a maximum score of 5.00 (range = 2.95). A multiple regression was used to test if participating in the nine values of biophilia predicted nature connectedness. For the regression analysis, the amended items of the dominionistic, humanistic and moralistic subscales were used. In keeping with the suggestions of Field (2014), collinearity issues were checked using VIF values, which were all below 10 (average VIF = 2.06) and the tolerance statistics which were all above 0.2. This indicated that multicollinearity was not a concern. Additionally, the assumption of errors was tested with the Durbin-Watson, which met the assumption of independent errors (Durbin-Watson = 2.39). The multiple regression indicated the nine values explained 61% of the variance of nature connectedness ($R^2 = .61$, $F(9, 193) 33.52$, $p = .001$). The humanistic ($\beta = .28$, $p = .002$), symbolic ($\beta = .15$, $p = .040$), moralistic ($\beta = .23$, $p = .001$) and negativistic ($\beta = -.14$, $p = .006$) values were all significant predictors of nature connectedness. The aesthetic ($\beta = .08$, $p = .270$), naturalistic ($\beta = .08$, $p = .268$), utilitarian ($\beta = .05$, $p = .339$), dominionistic ($\beta = -.05$, $p = .277$) and ecologistic-scientific ($\beta = .01$, $p = .824$) were not significant predictors of nature connectedness in the model. The correlations between the nine values of Biophilia, both participating in (table 5.2) and valuing being able to participate in (table 5.3) are presented below.

Table 5.2: Inter-Correlations between Participating in the Nine Values of Biophilia.

	Aesthetic	Naturalistic	Utilitarian	Dominionistic	Negativistic	Ecologicistic-Scientific	Humanistic	Symbolic	Moralistic
Aesthetic									
Pearson									
Correlation	1	.673**	.227**	.491**	-.240**	.579**	.675**	.637**	.449**
Sig. (2-Tailed)		.000	.000	.000	.030	.000	.000	.000	.000
N	203	203	203	203	203	203	203	203	203
Naturalistic									
Pearson									
Correlation	.673**	1	.295**	.415**	-.352**	.522**	.677**	.656**	.444**
Sig. (2-Tailed)	.000		.000	.000	.001	.000	.000	.000	.000
N	203	203	203	203	203	203	203	203	203
Utilitarian									
Pearson									
Correlation	.227**	.295**	1	.234**	-.352**	.252**	.279**	.235**	.209**
Sig. (2-Tailed)	.000	.000		.000	.000	.000	.000	.000	.001
N	203	203	203	203	203	203	203	203	203
Dominionistic									
Pearson									
Correlation	.491**	.491**	.234**	1	-.175**	.823**	.524**	.486**	.418**
Sig. (2-Tailed)	.000	.000	.000		.006	.000	.000	.000	.000
N	203	203	203	203	203	203	203	203	203
Negativistic									
Pearson									
Correlation	-.240**	-.352**	-.352**	-.175**	1	-.238**	-.270**	-.187**	-.163*
Sig. (2-Tailed)	.030	.001	.000	.006		.00	.000	.004	.083
N	203	203	203	203	203	203	203	203	203

	Aesthetic	Naturalistic	Utilitarian	Dominionistic	Negativistic	Ecologistic-Scientific	Humanistic	Symbolic	Moralistic
Ecologistic-Scientific	.579**	.522**	.252**	.823**	-.238**	1	.585**	.511**	.413**
Pearson Correlation	.000	.000	.000	.000	.000		.000	.000	.000
Sig. (2-Tailed)	203	203	203	203	203	203	203	203	203
N									
Humanistic							1	.701**	.470**
Pearson Correlation	.675**	.675**	.279**	.524**	-.270**	.585**		.000	.000
Sig. (2-Tailed)	.000	.000	.000	.000	.000	.000	203	.000	.000
N	203	203	203	203	203	203	203	203	203
Symbolic								1	.495**
Pearson Correlation	.637**	.637**	.235**	.486**	-.187**	.511**	.701**		.000
Sig. (2-Tailed)	.000	.000	.000	.000	.004	.000	.000	203	.000
N	203	203	203	203	203	203	203	203	203
Moralistic									1
Pearson Correlation	.449**	.444**	.209**	.418**	-.163*	.413**	.470**	.495**	
Sig. (2-Tailed)	.000	.000	.001	.000	.083	.000	.000	.000	203
N	203	203	203	203	203	203	203	203	203

** significant at $p < 0.01$

* significant at $p < 0.05$

Table 5.3: Inter-Correlations between Valuing being able to Participate in the Nine Values of Biophilia.

	Aesthetic	Naturalistic	Utilitarian	Dominionistic	Negativistic	Ecologicistic-Scientific	Humanistic	Symbolic	Moralistic
Aesthetic									
Pearson									
Correlation	1	.622**	.196**	.098	-.036	.568**	.582**	.522**	.517**
Sig. (2-Tailed)		.000	.003	.082	.307	.000	.000	.000	.000
N	203	203	203	203	203	203	203	203	203
Naturalistic									
Pearson									
Correlation	.622**	1	.284**	.031	-.163**	.325**	.580**	.606**	.404**
Sig. (2-Tailed)	.000		.000	.331	.010	.000	.000	.000	.000
N	203	203	203	203	203	203	203	203	203
Utilitarian									
Pearson									
Correlation	.196**	.284**	1	.416**	.112	.385**	.285**	.264**	.281**
Sig. (2-Tailed)	.003	.000		.000	.056	.000	.000	.000	.000
N	203	203	203	203	203	203	203	203	203
Dominionistic									
Pearson									
Correlation	.098	.031	.416**	1	.169*	.259**	.149*	.080	.193**
Sig. (2-Tailed)	.082	.331	.000		.008	.000	.017	.129	.003
N	203	203	203	203	203	203	203	203	203
Negativistic									
Pearson									
Correlation	-.036	-.163**	.112	.169*	1	.122*	-.063	-.148*	-.030
Sig. (2-Tailed)	.307	.010	.056	.008		.042	.184	.018	.335
N	203	203	203	203	203	203	203	203	203
Ecologicistic-Scientific									
Pearson									
Correlation	.568**	.325**	.385**	.259**	.122*	1	.496**	.328**	.497**
Sig. (2-Tailed)	.000	.000	.000	.000	.042		.000	.000	.000
N	203	203	203	203	203	203	203	203	203

	Aesthetic	Naturalistic	Utilitarian	Dominionistic	Negativistic	Ecologistic-Scientific	Humanistic	Symbolic	Moralistic
Humanistic									
Pearson									
Correlation	.582**	.580**	.285**	.149*	-.063	.496**	1	.602**	.575**
Sig. (2-Tailed)	.000	.000	.000	.017	.184	.000		.000	.000
N	203	203	203	203	203	203	203	203	203
Symbolic									
Pearson									
Correlation	.522**	.606**	.264**	.080	-.148*	.328**	.602**	1	.572**
Sig. (2-Tailed)	.000	.000	.000	.129	.018	.000	.000		.000
N	203	203	203	203	203	203	203	203	203
Moralistic									
Pearson									
Correlation	.517**	.404**	.281**	.193**	-.030	.497**	.575**	.572**	1
Sig. (2-Tailed)	.000	.000	.000	.003	.335	.000	.000	.000	
N	203	203	203	203	203	203	203	203	132

Valuing Nature Activities & Nature Connectedness Regressions

A multiple regression was used to test if valuing being able to participate in the nine values of biophilia predicted nature connectedness. For the regression analysis, the amended items of the dominionistic and humanistic subscales were used. Collinearity issues were checked using VIF values, which were all below 10 (average VIF = 1.91) and the tolerance statistics which were all above 0.2, indicating that multicollinearity was not a concern. The assumption of errors was also tested which met the assumption of independent errors (Durbin-Watson = 2.30). The multiple regression indicated the nine values explained 58% of the variance of nature connectedness ($R^2 = .58$, $F(9, 193) 29.82$, $p = .001$). The naturalistic ($\beta = .21$, $p = .004$), humanistic ($\beta = .45$, $p = .001$) and moralistic ($\beta = .19$, $p = .003$) values were all significant predictors of nature connectedness. The aesthetic ($\beta = .01$, $p = .901$), utilitarian ($\beta = .07$, $p = .211$), dominionistic ($\beta = -.05$, $p = .361$), negativistic ($\beta = -.08$, $p = .119$), ecologicistic-scientific ($\beta = -.00$, $p = .963$) and symbolic ($\beta = -.04$, $p = .603$) values were not significant predictors of nature connectedness in the model.

Mediation Analysis

The aesthetic value of biophilia was found not to be a significant pathway of nature connectedness in the regression model. This was unexpected, given that the aesthetics of nature have been linked to preferences for certain natural environments (Kaplan, 1995) and have been identified as a significant mediator of connection to nature and wellbeing (Zhang et al., 2014). A mediation analysis was conducted on the significant predictors of nature connectedness from the regression analyses, with the aesthetic value as a mediator. Bootstrapping was used to test whether the true indirect effect would be zero using 5,000 bootstrap re-samples at a 95% confidence interval as this method has more power than the sobel or causal steps tests (Hayes, 2009). The bootstrap indirect effects can be found in tables 5.4 and 5.5. The aesthetic value was a simple mediator between the humanistic, symbolic and moralistic values when participating (see table 5.4), and for the naturalistic and moralistic values when valuing being able to participate in the activities and nature connectedness (see table 5.5). For each mediation analysis the total effect was greater than the direct effect.

Table 5.4: Simple Mediation of the Indirect Effects of Participating in Humanistic, Moralistic and Symbolic Values on Nature Connectedness (n = 203; 5000 Bootstrap Samples, one-tailed).

	β	<i>SE</i>	<i>t</i>	<i>p</i>
Humanistic to NR	.29	.02	14.54	= .001
Humanistic to Aesthetic	.51	.03	14.98	= .005
Aesthetic to NR	.12	.04	2.63	= .001
	<i>Z</i>	<i>p</i>	LL95%CI	UL95%
Sobel and Effect	2.58	= .005	.01	.10
	β	<i>SE</i>	<i>t</i>	<i>p</i>
Symbolic to NR	.29	.03	11.62	= .001
Symbolic to Aesthetic	.50	.04	11.72	= .001
Aesthetic to NR	.20	.04	5.15	= .001
	<i>Z</i>	<i>p</i>	LL95%CI	UL95%
Sobel and Effect	4.70	= .001	.06	.14
	β	<i>SE</i>	<i>t</i>	<i>p</i>
Moralistic to NR	.31	.03	10.77	= .001

	β	SE	t	p
Moralistic to Aesthetic	.47	.05	9.05	= .001
Aesthetic to NR	.23	.04	6.55	= .001
	Z	p	LL95%CI	UL95%
Sobel and Effect	5.29	= .001	.07	.15

Table 5.5: Simple Mediation of the Indirect Effects of Valuing Humanistic, Naturalistic and Moralistic Values on Nature Connectedness (n = 203; 5000 Bootstrap Samples, one-tailed).

	β	SE	t	p
Humanistic to NR	.41	.03	14.69	= .001
Humanistic to Aesthetic	.48	.04	12.37	= .043
Aesthetic to NR	.09	.05	1.72	= .001
	Z	p	LL95%CI	UL95%
Sobel and Effect	1.70	= .044	-.01	.09
	β	SE	t	p
Naturalistic to NR	.40	.04	11.06	= .001
Naturalistic to Aesthetic	.52	.05	11.26	= .001

Aesthetic to NR	.19	.05	3.64	= .001
	<i>Z</i>	<i>p</i>	LL95%CI	UL95%
Sobel and Effect	3.45	= .001	.04	.16
	β	<i>SE</i>	<i>t</i>	<i>p</i>
Moralistic to NR	.37	.04	9.22	= .001
Moralistic to Aesthetic	.45	.05	8.57	= .001
Aesthetic to NR	.27	.05	5.37	= .001
	<i>Z</i>	<i>p</i>	LL95%CI	UL95%
Sobel and Effect	4.53	= .001	.07	.17

Discussion

Participating in humanistic, moralistic and symbolic nature activities emerged as significant predictors of nature connectedness, while the value of participating in humanistic, moralistic, and naturalistic nature activities were also significant predictors of nature connection. The aesthetic value acted as a mediator when participating in humanistic, symbolic, and moralistic activities and when valuing participating in naturalistic and moralistic activities and nature connectedness. For all five of the mediations the total effect was greater than the direct effect for both models. Due to the low Cronbach alphas found for two of the significant predictors within the regression model, a replication was conducted investigating only the significant predictors using amended scales for the humanistic and moralistic values. It was decided not to include the dominionistic, utilitarian, and ecologicistic-scientific values within the second study as

they were non-significant predictors in the model. While the subscales used for the dominionistic and utilitarian had low Cronbach alphas, both values did not emerge as significant predictors and given that the two values focus on exploitation and use of nature and are therefore not compatible with an equal value for all life that is the basis of nature connectedness (Schultz et al., 2004) they were not included within study 2. While it has been thought that knowledge about nature can encourage a connectedness with nature (Lieflander et al., 2012), the ecologicistic-scientific value was not a significant predictor of nature connection and given the subscale showed acceptable reliability ($\alpha = .64$) the value was also not included in the second study presented within this chapter.

Study Two

Method

Design

A replication of study one was conducted again using scales measuring the humanistic, moralistic, symbolic, naturalistic, aesthetic, and negativistic values of biophilia. It was predicted that the humanistic, symbolic, moralistic, and naturalistic values would all be significant predictors of nature connectedness with aesthetics once again acting as a mediator.

Participants

The effect size ($R^2 = .61$) obtained in study one was used in a power calculation using Gpower (Faul, et al., 2009), indicating a minimum sample size of 64 participants was required. A total of 118 participants took part in the replication study, 79 were female with a mean age of 38.76 (15.32 *SD*), ranging from 18-78 years with 104 participants residing in the UK. All participants were recruited through snowball sampling via social media accounts.

Materials

Alongside the Nature Relatedness scale (Nisbet et al., 2009) the items used to measure the symbolic, naturalistic, negativistic and aesthetic values of biophilia in study 1 were once again included. Both the humanistic and moralistic values had an item removed based on the Cronbach's obtained in study one and replaced with a new item (see table 5.6). The resulting scales for participating in humanistic ($\alpha = .79$) and moralistic ($\alpha = .59$)

activities and the value of participating in humanistic ($\alpha = .83$) and moralistic ($\alpha = .72$) scales showed greater reliability and brought the Cronbach alphas of all the subscales used, all with three items, above .5.

Table 5.6: Replacement Biophilia Activity Items used in Study Two

Biophilic Value	Study One Item	Study Two Replacement Item
Humanistic	Thinking about an animal you know when you are not with it e.g. at work	Loved being in nature
Moralistic	Thinking about the treatment of nature e.g. animal welfare, protecting greenbelt land	Displayed a moral responsibility towards nature

Procedure

Study two followed the same procedure outlined for study one that only differed in the recruitment of participants; instead of recruiting students via a university recruitment website in addition to the general population via social media, only social media accounts were used to recruit members of the general population for this study.

Results

Nature Activities & Nature Connectedness Correlations

Taking part in aesthetic activities was positively related to nature connectedness, ($r = .50$), as were the naturalistic, ($r = .72$), humanistic, ($r = .73$), symbolic, ($r = .63$) and moralistic ($r = .62$) values which were all significant (all $p = .001$). Only the negativistic value was negatively related to nature connectedness ($r = -.21$), which was significant ($p = .011$). The value attached to engaging with aesthetic activities was positively related to nature connectedness, ($r = .56$), as was naturalistic, ($r = .71$), humanistic, ($r = .73$), symbolic, ($r = .64$) and moralistic ($r = .66$) values which were significant (all $p = .001$). The negativistic value was once again negatively related to nature connectedness ($r = -.27$), which was significant ($p = .002$).

Participating in Nature Activities & Nature Connectedness Regressions

The mean nature connectedness score was 3.95 ($SD = 0.60$) with a minimum score of 1.76 and a maximum score of 5.00 (range = 3.24). A multiple regression was used to test if participating in the nine values of biophilia predicted nature connectedness. Collinearity issues were checked using VIF values, which were all below 10 (average VIF = 2.59) and the tolerance statistics which were all above 0.2, indicating that multicollinearity was not a concern. The assumption of errors was also tested which met the assumption of independent errors (Durbin-Watson = 2.02). The multiple regression indicated the six values explained 62% of the variance of nature connectedness ($R^2 = .62$, $F(6, 111) 29.54$, $p = .001$). A comparison of the variables included within the models for participating in the nature activities for studies one and two are presented in table 5.7.

Table 5.7: Participation in Nature Activity Predictors of Nature Connectedness

			Study One	Study Two
	<i>b</i>	β	<i>p</i>	<i>p</i>
Constant	2.23			= .001
Aesthetic	-.02	-.03	= .270	= .735
Naturalistic	.10	.22	= .268	= .064
Negativistic	-.07	-.11	= .006	= .077
Humanistic	.16	.32	= .002	= .011
Symbolic	.06	.14	= .040	= .114
Moralistic	.12	.20	= .001	= .014

Value of Nature Activities & Nature Connectedness Regressions

A multiple regression was used to test if the value of being able to participate in the nine values of biophilia predicted nature connectedness. Collinearity issues were checked using VIF values, which were all below 10 (average VIF = 2.75) and the tolerance statistics which were all above 0.2, indicating that multicollinearity was not a concern. The assumption of errors was also tested which met the assumption of independent errors (Durbin-Watson = 2.00). The multiple regression indicated the nine values explained 64% of the variance of nature connectedness ($R^2 = .64$, $F(6, 111) 33.30$, $p = 0.01$). A comparison of the variables included within the models for the value of being able to participate in nature activities for studies one and two are presented in table 5.8.

Table 5.8: The Value of Participation in Nature Activity Predictors of Nature Connectedness

			Study One	Study Two
	<i>b</i>	β	<i>p</i>	<i>p</i>
Constant	2.10			= .001
Aesthetic	-.02	-.03	= .901	= .742
Naturalistic	.15	.24	= .004	= .039
Negativistic	-.14	-.17	= .119	= .005
Humanistic	.16	.25	= .001	= .042
Symbolic	.07	.14	= .603	= .135
Moralistic	.19	.27	= .003	= .001

Mediation Analysis

A mediation analysis was again conducted on the significant predictors using the bootstrapping approach suggested by Hayes (2009). Aesthetics was only a significant mediator of the relationship between participating in (see table 5.9), and the value of participating (see table 5.10) in moralistic activities and nature connectedness.

Table 5.9: Simple Mediation of the Indirect Effects of Participating in Humanistic and Moralistic Values on Nature Connectedness (n = 118; 5000 Bootstrap Samples, one-tailed).

	β	<i>SE</i>	<i>t</i>	<i>p</i>
Humanistic to NR	.37	.03	11.48	= .001
Humanistic to Aesthetic	.58	.06	9.49	= .001
Aesthetic to NR	.02	.05	.38	= .353
	<i>Z</i>	<i>p</i>	LL95%CI	UL95%
Sobel and Effect	.38	= .354	-.05	.07
	β	<i>SE</i>	<i>t</i>	<i>p</i>
Moralistic to NR	.35	.04	8.49	= .001
Moralistic to Aesthetic	.47	.08	5.84	= .001
Aesthetic to NR	.15	.05	3.33	= .001
	<i>Z</i>	<i>p</i>	LL95%CI	UL95%

Sobel and Effect	2.86	= .003	.02	.12
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Table 5.10: Simple Mediation of the Indirect Effects of Valuing Humanistic, Naturalistic and Moralistic Values on Nature Connectedness (n = 118; 5000 Bootstrap Samples, one-tailed).

	β	<i>SE</i>	<i>t</i>	<i>p</i>
Humanistic to NR	.46	.04	11.63	= .001
Humanistic to Aesthetic	.64	.06	10.21	= .001
Aesthetic to NR	.08	.06	1.27	= .103

	<i>Z</i>	<i>p</i>	LL95%CI	UL95%
Sobel and Effect	1.26	= .104	-.03	.12

	β	<i>SE</i>	<i>t</i>	<i>p</i>
Naturalistic to NR	.43	.04	10.88	= .001
Naturalistic to Aesthetic	.66	.06	12.01	= .001
Aesthetic to NR	.05	.07	.77	= .220

	<i>Z</i>	<i>p</i>	LL95%CI	UL95%
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	β	<i>SE</i>	<i>t</i>	<i>p</i>
Sobel and Effect	.77	= .220	-.05	.12
Moralistic to NR	.46	.05	9.38	= .001
Moralistic to Aesthetic	.59	.08	7.67	= .001
Aesthetic to NR	.19	.06	3.32	= .001
	<i>Z</i>	<i>p</i>	LL95%CI	UL95%
Sobel and Effect	3.03	= .001	.04	.18

Discussion

In keeping with the results obtained in study one, humanistic, moralistic, and naturalistic activities when valuing being able to participate were once again significant predictors of nature connectedness. Contrary to the results of study one, only humanistic and moralistic activities were significant predictors of nature connectedness when participating, with the symbolic value not emerging as a significant predictor in the regression model in study two. The mediation provided by the aesthetic value was significant but only between the moralistic value (both participating in, and value of participating in) and nature connectedness.

General Discussion

Humanistic, naturalistic, and moralistic activities were significant pathways to nature connectedness in both studies one and two. The aesthetic value was found to act as a mediator for moralistic activities and nature connectedness, demonstrating the importance of nature's beauty in developing a connection to nature. Activities that involved the use of, dominance over, rejection of, and a scientific inquiry of nature did

not act as pathways to nature connectedness. The Biophilia Hypothesis was utilised as a framework to guide the selection of the activities to investigate the pathways to nature connectedness. As connectedness to nature was the focus of the research rather than the expression of the nine values of biophilia, the significant pathways have been renamed in order to distinguish them from the biophilic values and to better facilitate their applied use. The naturalistic value becomes contact; the humanistic becomes emotion; the moralistic becomes compassion; the aesthetic becomes beauty; and the symbolic becomes meaning.

Pathways to Nature Connectedness

Activities involving contact, an emotional attachment, or compassion for nature all emerged as significant pathways to nature connectedness, supporting both the use of biophilia as a framework for investigating the pathways and previous research that has sought to facilitate a connectedness with nature. Contact acted as a route to nature connectedness when valuing being able to engage directly with nature. Previously, outdoor pursuits such as hiking or walking in green space have been found to facilitate connectedness with nature (Martin, 2004; Mayer et al., 2009). The value placed on outdoor nature experiences were related to the participant's connectedness with nature, but actual contact was not. This suggests that simply being outdoors was not enough when having contact with nature; leading to the possibility that the other significant pathways are more important for a connected relationship. Mayer and Frantz (2004) amongst others have previously suggested that affection for nature leads to nature connection, supporting the results of the regression model that emotion based activities were a significant pathway to nature connectedness. Previous research has investigated pro-environmental behaviours and attitudes as an outcome of nature connectedness (Davis et al., 2011); the results of this study support the notion that a compassion for nature awakens a connectedness with nature (Lewis & Townsend, 2014) and functions as a pathway in its own right. Meaning making through symbolism as a way of deepening the human-nature relationship (White, 2012) as an expression of transpersonal experiences (Zylstra et al., 2014) has been suggested to function as a route to nature connectedness. While meaning was a significant predictor in study one, this was not replicated in study two despite using the same items throughout. The use of meaning making activities has received little empirical investigation and with the mixed results obtained in the two studies presented, further study is required.

The Mediating effect of Beauty

It was surprising that beauty did not emerge as a direct pathway to nature connectedness in either study one or study two. More interestingly, engagement with nature's beauty was found to consistently mediate the relationship between compassion and nature connectedness. This mediation also facilitated a greater total effect on nature connectedness, supporting recent work on the importance of nature's beauty (see Zhang et al., 2014). The mediating effect of beauty may also explain the increase in implicit connectedness to nature found by Bruni et al., (2015) in children engaging creatively with nature through activities including sculpting and photography. It appears that the appreciation of nature's beauty is an important part of the relationship between compassion and nature connectedness, possibly as the visual appeal of nature fascinates, thereby attention is directed towards it (Kaplan, 1995) that in turn facilitates a positive connection with nature. Beauty did significantly mediate contact, emotion, and meaning with nature connectedness in study one but this mediation was not replicated in study two. With beauty acting as a mediator in this and previous research, testing the application of compassion through nature's beauty as a pathway to nature connectedness, along with the potential pathways of emotion, meaning, and contact would be a logical next step to investigate the theoretical implications the mediation model presents for connecting with nature.

Interplay between the Identified Pathways

While the overlap between the items used to investigate the potential pathways to nature connectedness was covered earlier in this chapter, the interplay between the identified pathways ought to be discussed; given that activities involving contact, emotion, meaning, compassion, and beauty may not necessarily be independent, but linked concepts that feed into one another instead. What follows is a brief discussion of the possible interplay between each of the identified pathways. Research has suggested that an emotional affiliation with nature may occur through positive interactions with nature during childhood (Hinds & Sparks, 2008; Muller et al., 2009), while having contact with nature through walking has been linked to an increase in positive emotions and nature connection (Mayer et al., 2009). This would suggest that when an individual is attempting to connect with nature through emotion, the pathway of contact may also be necessary to provide an opportunity for the facilitation of an emotional response to nature.

Likewise, the desire to have contact with nature may result from the personal preferences of the individual; which itself may be determined by a positive emotional response, given that preferences for nature are dependent on positive and negative emotion (Russell et al., 2013). When emotion is acting as a pathway to nature connection, this may occur through aspects of beauty. As an individual attends to the aesthetics of nature that are pleasing, a sense of awe may be felt, a sensation which has been linked to feeling love towards nature (Perkins, 2010). It could be argued that compassion for other aspects of nature is in itself an emotional response; whereby feelings of empathy and similarity are felt (Gilbert, 2014), suggesting the pathways of emotion and compassion have some degree of shared similarity. The ability to find personal meaning in nature is likely to result from having some form of contact with nature, as walking in nature is suggested to allow for an individual to gain personal meaning through a sense of self and place (Waitt, Gill & Head, 2008). Being able to communicate a concept that is not directly expressed which may be the essence of meaning making, could be inspired by focussing attention on the aesthetically pleasing aspects of nature; as the landscape has been found to provide meaning and spiritual inspiration during visits to areas of wilderness (Fredrickson & Anderson, 1999). It is clear that there may be some interplay between contact, emotion, meaning, compassion, and beauty, and as such, further testing of the identified pathways as a unified group, rather than discrete entities, is required in order to utilise the interplay that may be important for facilitating nature connectedness.

Strengths & Limitations

This study represents an initial empirical investigation into the routes to a connectedness with nature, meeting the call for research into the specific activity pathways that lead to connectedness (Zylstra, et al., 2014). Biophilia has not been utilised previously to investigate the routes to nature connectedness due to a lack of a valid and reliable measure of biophilia, as testing the rubrics of the hypothesis directly is difficult (Kahn, 1999). The alternate approach used in this study, that of measuring participation in and valuing of participating in activities structured around the nine values of biophilia, removed the problems encountered by a psychometric approach in favour of a more ecologically valid application of the Biophilia Hypothesis. Each value was assessed through the average of three activity items, with five of the nine values showing good reliability when utilising all three items, with the remainder having improved reliability when a single item was removed. The humanistic and moralistic activity items were

improved further with the replacement of a single item for study two with significant pathways to nature connectedness found, as assessed by a reliable measure. The two values that did not have a scale with a reliability of .5 or above were the utilitarian and dominionistic values. The absence of activities comprised of using and dominating nature as pathways meet theoretical expectations, given that such activities could not lead to the valuing of all life as equal members of the natural community that nature connectedness implies (Schultz, et al., 2004). It is acknowledged that the reliability of utilitarian and dominionistic scale items was not ideal but their absence as pathways to connectedness should be accepted given the above theoretical argument. During the creation of the activity measure, an initial forty-five activity items were produced and validated to obtain the twenty-seven items used with seven of the nine scales showing good reliability through further refinement and replication in study two. Therefore the significant pathways of contact, emotion and compassion, measured by the reliable activity measures ought to be accepted as potential routes to nature connectedness and worthy of further applied investigation. This may take the form of emotional expression in nature through short or long term creative writing (see Richardson & Hallam, 2013; Richardson et al., 2015), noticing nature when walking or taking part in community projects to protect local beauty spots in order to facilitate nature connectedness.

Conclusion

Activities that involved contact, emotion, meaning, and a compassion for nature were found to act as pathways to nature connectedness, with nature's beauty consistently mediating the compassion pathway to nature connectedness. There is a need to move beyond a superficial contact with nature or focussing exclusively on knowledge and identification in order to have a positive relationship with nature. Neither of the two studies presented in this paper nor other works (see Bruni et al., 2015) have found support for either knowledge or superficial engagement with nature functioning as pathways to nature connectedness. Researchers and practitioners interested in facilitating nature connectedness and public engagement should focus specifically on activities that involve contact, emotional attachment, or a compassionate relationship with nature through nature's beauty. The identified pathways are especially relevant to those nature conservation NGO's currently aiming to encourage nature connectedness in order to move away from the value applied to knowing in favour of contact, emotion, meaning, and compassion. The pathways link well to the recommendations of the Common Cause for

Nature Report (PIRC, 2013). Uses of the pathways can extend beyond natural landscapes to be implemented in urban environments where opportunities to reconnect with nature exist (Newman & Dale, 2013) as frames through formal education, local conservation efforts and visitor attractions including museums, parkland and zoos. Doing so may help to encourage the uptake of pro-environmental behaviours and also lead to positive wellbeing outcomes on an individual and societal level that would benefit not only humanity but the more than human world to which we belong.

Chapter Summary

This chapter has built upon the initial seven pathways that emerged from a qualitative approach that were presented in chapter three and examined the potential pathways in a quantitative, systematic manner by using the Biophilia Hypothesis as a framework to successfully create a theoretical model of the pathways to nature connectedness. The pathways of contact, emotion, and compassion consistently predicted nature connectedness while meaning emerged as an inconsistent pathway between the two research studies; meeting aim 2 of the thesis. Beauty was found to be a consistent mediator of compassion, supporting previous findings of the mediating effect of nature's beauty. The theoretical model extends our understanding of the pathways to nature connection that counters the often used route of knowledge and understanding, especially as a systematic investigation has not been conducted previously with the two research studies presented being the first of their kind. While the model presented is a useful advancement in understanding, it is purely theoretical, necessitating further enquiry and testing. This is especially important given the need for applied research into nature connectedness (Clayton, 2012). To address this, chapter six presents an applied intervention that sought to increase nature connectedness by engaging individuals with nature via the identified pathways in order to test the theoretical model created in this chapter.

Chapter Six – A Pathways Intervention to Facilitate Nature Connectedness

In chapter five the pathways to nature connectedness were narrowed down from an initial seven pathways to four theoretical routes to connectedness; contact, emotion, meaning, and compassion. Furthermore, it was found that compassion was consistently mediated by beauty, with the mediation only found in the first of the two studies for emotion, meaning, and contact. While contact, emotion, meaning, and compassion have been found to act as pathways to nature connectedness in the theoretical model, the identified pathways require experimental testing. If the model created in chapter five is correct and contact, emotion, meaning, and compassion with beauty as a mediator, are pathways to nature connectedness, activities based around the pathways during an engagement with nature should increase nature connectedness. A quasi-experimental intervention study was therefore conducted into the effectiveness of activities based on the identified pathways, on increasing nature connectedness that is presented here as the fourth PhD study.

Introduction

It is estimated that around 50% of the Earth's population currently reside in urban environments (Lin et al., 2014). While urban living affords a range of quality of life benefits, it is thought that the urban environment leads to a disconnection with nature due to the lack of meaningful experiences with nature that are possible (Pyle, 2003). It has been suggested however that urban environments can facilitate chances to form a positive relationship with nature by engaging with the nature which the urban landscape contains (Newman & Dale, 2013). This would suggest that engaging with local natural spaces could lead to a connection with nature by those who reside in urban locations. Becoming connected with nature is important given that doing so predicts further engagement (Nisbet & Zelenski, 2013), while the wellbeing benefit of nature connectedness has been demonstrated frequently with the strongest relationship reported between nature connection and vitality (Capaldi et al., 2014). While the wellbeing outcomes of a connected relationship with nature have been frequently investigated, the activities leading to nature connectedness still require a systematic investigation (Zylstra et al.,

2014). Beyond this, research into the relationship with nature is often descriptive therefore applied research is needed instead (Clayton, 2012).

The body of literature that has utilised applied methods when researching potential routes to nature connectedness was covered in chapter two. Given that the potential activities that lead to nature connection have been investigated disparately, an alternative approach was taken in chapter five. The nine values of biophilia were used as a framework which identified contact, emotion, meaning, and compassion as pathways to nature connectedness, with mixed evidence for all of the pathways being mediated by beauty. While the conclusions of chapter five were underpinned by two separate surveys, there is still a need to go beyond the research methodology of a questionnaire design and to test the model proposed in chapter five in an applied setting to determine whether the potential pathways identified do lead to a connectedness with nature.

A quasi-experimental design with two control groups was employed to test a walking intervention where contact with nature and beauty mediated emotion, meaning, and compassion invoking activities were used as pathways to nature connectedness. It was predicted that walking in nature and engaging with nature via the mediated pathways would significantly increase nature connectedness when compared to walking in nature alone or walking in and engaging with the built environment. Furthermore, it was predicted that only the two nature conditions would lead to a significant increase in wellbeing, with no significant increase shown when walking in a built environment.

Method

Design

An independent measures experimental design was used, consisting of three conditions: walking in nature with three pathway activities, walking in nature with no pathway activities and walking in an urban environment with three pathway activities. The dependant variables were nature connectedness and vitality.

Participants

A Cohen's *d* was calculated based on the means and standard deviations obtained by Mayer et al., (2009) when investigating the effect of walking in nature and built environments on connectedness with nature, with an effect size of .81. The Cohen's *d* was

converted to an *f* value using an online calculator (DeCosta, 2012) for use in GPower (Faul et al., 2009). The resulting calculation indicated a minimum of 69 participants were required. A total of 72 participants (14 male) with a mean age of 23.93 (7.96 *SD*), ranging from 18 to 57 years old took part with all participants recruited via the University of Derby psychology student participation points system. The specific breakdowns for the three conditions can be found in table 6.1. The participants were split evenly across the three groups with 24 participants in each condition. All were recruited via the University of Derby psychological research participation system in exchange for participation points for taking part. If participants suffered from mobility issues they would be excluded from the study due to the uneven surface and mildly difficult terrain that were present on the walking routes; although this did not occur and no participants were excluded from the research.

Table 6.1 Mean Age, Age Range and Gender of the Three Conditions

Condition	Mean age	Age range	Gender
Built activity	22.25 (6.44 <i>SD</i>)	18 to 45	21 Female (3 Male)
Nature activity	22.21 (6.92 <i>SD</i>)	18 to 52	20 Female (4 Male)
Nature control	27.33 (9.38 <i>SD</i>)	19 to 57	17 Female (7 Male)

Materials

The Nature Relatedness scale (Nisbet et al., 2009), the Subjective Vitality Scale (Ryan & Fredrick, 1997) and the International Physical Activity Questionnaire (Booth, 2000) were utilised as pre, post and follow-up measures. An Amazon Fire HD tablet and television screens were used to play videos to the participants with paper and pens used by participants to record their observations of meaning from the immediate environment.

Procedure

The participants initially responded to a notice advertising a study that was investigating the use of the University of Derby's spaces on the psychological research

participation system by signing up for a participation slot. Multiple slots were available for participants to sign up to, with each slot having been randomly assigned to one of the three conditions by the researcher prior to the slot being made available to the participants; although the participants did not know which of the three conditions they would be taking part in. Each slot had a minimum of one and a maximum of ten participants taking part. Before attending, participants were instructed to wear suitable clothing for outdoor walking, regardless of the condition to which they had been assigned. The weather conditions present during each session and time of day were also recorded prior to the session starting (see appendix 6.2). Upon arrival, participants were given an information sheet (see appendix 6.3) that indicated the study was investigating the use of spaces within the University of Derby and would involve answering questions and a guided walk. Any participants who suffered from mobility issues would be excluded from the study (although this did not occur). Once the participants had read the information sheet and understood what taking part entailed, they then signed the consent section agreeing to take part. Irrespective of the condition, all participants completed a questionnaire pack (appendix 6.4) that contained demographics, the Nature Relatedness scale and the Subjective Vitality scale. Four different versions were used that presented the order of measures differently in order to counter balance the questionnaire pack for both pre and post guided walk. Also included within the questionnaire pack was the International Physical Activity Questionnaire, utilised in an attempt to counter any demand characteristics. Participants in the nature activity condition were led by the researcher on a walk around the green spaces around the exterior of the University of Derby and were told to pay attention to their surroundings while on the walk.

At three set points (the roof of the multi-faith centre overlooking grassland, a wooded grass area to the rear of the University and the koi carp pond) the walk was stopped (images of the stop off points are presented in figure 6.1). At the set points participants engaged with either an emotion-beauty, meaning-beauty or compassion-beauty activity focussed on nature (see appendix 6.5). The emotion-beauty activity consisted of having a conversation with others about their thoughts and feelings about the nature the participants had seen. For meaning-beauty, participants spent five minutes writing down the meaning of any meaning or symbolism they could see in nature while participants watched the RSPB's build a home for nature video for the compassion-beauty activity. In the indoor environment activity condition, participants were led on a walk

around the interior of the Kedleston Road campus of the University of Derby and told to pay attention to their surroundings while on the walk. Again at three set points (a sofa in the students union, the atrium balcony and the seated area in south tower, see figure 6.2) the walk was stopped. At the set points participants engaged with either an emotion-beauty, meaning-beauty or compassion-beauty activity focussed on the built environments (see appendix 6.5). Participants had a conversation with others about the University for emotion-beauty, wrote down the meaning of any signs within the university they could see for meaning-beauty, and watched an atrium Television showing an energy monitor and other video's for the compassion-beauty activity. In the nature control condition the participants were taken on the same walk as the nature activity condition and were instructed to pay attention to their surroundings while on the walk. Instead of undertaking set activities at the three stopping points, the participants were allowed to talk amongst themselves with no set activity provided. It is worth noting that the walks were all of a similar distance, with the nature conditions measuring 726 metres and the built walk measuring 718 metres. All the walking routes were measured using a pedometer during the planning stage of the research. At the end of each condition, the same measures administered prior to each condition were completed once again and participants were thanked for taking part with a full debrief provided (see appendix 6.6). Two-months on from completing the study, participants were contacted by email to complete follow-up measures, once again utilising the Nature Relatedness scale and the Subjective Vitality scale. Participants were sent an invite to take part that included a link to a Qualtrics survey containing a combined information and consent page and the same three measures along with demographic items. Upon completing the measures, a debrief page was provided with a thank you for taking part.

Figure 6.1 Stop off Locations for the Pathway Activity and Nature Control Conditions

Koi Carp Pond



Multi-Faith Centre Roof



Wooded Area

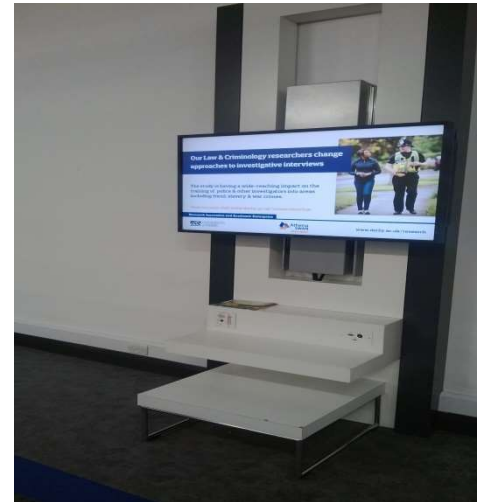


Figure 6.2 Stop off Locations for the Built Activity Condition

Sofa in the Students Union



Atrium Balcony



Seated Area in South Tower



Results

The mean overall nature connectedness score prior to taking part was 3.27 (.62 *SD*), that increased to 3.37(.61 *SD*) after taking part. The mean nature connectedness scores for the three conditions are presented in table 6.2.

Table 6.2 Means and Standard Deviations of the Three Experimental Conditions

Condition	NR Pre	NR Post
Built Activity	3.09 (.55 <i>SD</i>)	3.18 (.57 <i>SD</i>)
Pathway Activity	3.28 (.52 <i>SD</i>)	3.49 (.53 <i>SD</i>)
Nature Control	3.45 (.73 <i>SD</i>)	3.46 (.70 <i>SD</i>)

The data was screened for skewness, kurtosis and outliers with all falling within acceptable parameters. A mixed-methods ANOVA was conducted to determine whether there was an interaction between taking part in either the built activity, pathway activity or nature control conditions and nature connectedness scores over time.

A Mauchley's test demonstrated that the assumption of sphericity had not been violated ($\chi^2(0) = 0.00, p > 0.05$); it was decided that the non-corrected degrees of freedom should be used. The mixed measures ANOVA showed that there was a significant interaction between condition and nature connectedness over time $F(2, 69) = 3.60, p = .033, \omega^2 = .04$. However, the main effect of condition on nature connectedness was non-significant, $F(2, 69), 1.88, p = .16$. Given that the overall interaction was significant, the data was explored further. Three paired samples t-tests were conducted to investigate the effect of condition on nature connectedness. The pathway activity condition showed a significant increase in nature connectedness ($t(23) = -3.99, p = .001$, (one-tailed) $r = .41$) while the built activity ($t(23) = -1.57, p = .065$, (one-tailed) and nature control ($t(23) = -.31, p = .380$, (one-tailed) conditions did not significantly increase nature connectedness.

A further mixed measures ANOVA was conducted on changes in vitality over time. The Mauchley's test demonstrated that the assumption of sphericity had not been violated ($\chi^2(0) = 0.00, p > .05$). It was decided that the non-corrected degrees of freedom

should be used. There was a significant change in vitalisation over time $F(1, 69) = 8.22, p = .005$ but the interaction between vitalisation over time and condition was non-significant $F(2, 69) = .68, p = .509$. Given that the overall interaction of condition on vitalisation was significant, three paired samples t-tests were conducted. Both the nature control ($t(23) = -2.78, p = .006$, (one-tailed), $r = .25$) and pathway activity conditions ($t(23) = -1.84, p = .039$, (one-tailed), $r = .13$) showed a significant increase in vitality while the built activity condition had a non-significant effect on vitality ($t(23) = -.79, p = .218$, (one-tailed)).

Discussion

There was an overall significant main effect of condition on nature connectedness and while initially no significant difference between the three conditions was shown in the ANOVA, subsequent paired samples t-tests showed a significant increase in nature connectedness in the pathway activity condition only. Furthermore, both the pathway activity and nature control conditions showed increased levels of vitality while the built activity condition did not significantly increase vitality.

The finding that the pathway activity condition led to a significant increase in nature connectedness when compared to the nature control and built activity conditions supports the prediction that the pathway condition would significantly increase nature connectedness. It was predicted that the nature control condition would also increase nature connectedness in keeping with previous research (see Mayer et al., 2009). While the nature control condition did show a very small increase, it was non-significant, eliminating the possibility that the physical walk had an effect on the increases in nature connectedness in the pathway activity condition. The significant increase in nature connectedness in the pathway condition supports the theoretical model presented in chapter five that contact, emotion, meaning, and compassion, when mediated by beauty, are pathways to nature connectedness. The significant effect of engaging with nature through the pathways provides further support to previous findings that walking in nature (Mayer, et al., 2009) does increase the feeling of nature connectedness. Furthermore, that positive emotion (Mayer & Frantz, 2004; Muller et al., 2009), compassion (Lewis & Townsend, 2014) and meaning (White, 2012) play a role in facilitating nature connection. The significant effect of engaging with nature via the pathways, especially in an urban environment that was used in this study, has implications for the application of the

pathways by organisations and charities that promote interactions with nature. Around 50% of the world's population is thought to live in an urban environment (Lin et al., 2014) which has a mixed effect on humanity's relationship with nature; it is suggested that the perceived disconnect between humanity and the rest of nature is due to a loss of meaningful experiences with nature as a result of urban living (Pyle, 2003) yet urban environments are thought to offer chances to re-establish a positive relationship with nature (Newman & Dale, 2013). The results of this study suggest that it is possible to increase the sensation of nature connectedness within an urban environment but that the type of interaction with nature is important, given that merely walking in a natural setting did not increase nature connectedness. Instead, this study found that engaging via the pathways of contact, emotion, meaning, and compassion with beauty as a mediator, lead to a connection with nature. Local councils, charities and non-governmental organisations who wish to increase participation with greenspaces, individual species and wider nature should use the pathways as frames in order to increase nature connectedness within the people they work with given that it not only leads to wellbeing benefits (Capaldi et al., 2014) but also predicts further engagement with nature (Nisbet & Zelenski 2013).

While there was an increase in mean nature connection scores in the built activity condition, the increase was not significant. This may be explained by both the materials used and location of the intervention. Completing the Nature Relatedness scale may have led to participants reflecting on their relationship with wider nature, given that reflection has been found to be a stable predictor of nature connectedness (Richardson & Sheffield, 2015). Alongside reflection, the location of the research may also have led to a greater sensation of social connectedness as the university campus would be a place where social connections occur for the student participants, and as social connectedness and nature connectedness have been shown to be related concepts (Lee, Ashton, Choi & Zacariassen, 2015), this may explain the small increases in nature connectedness within the built activity condition.

Given that wellbeing has been frequently shown as an outcome of nature connectedness, it was not surprising that vitality, the wellbeing measure most closely related to a connectedness with nature (Capaldi et al., 2014), was shown to also significantly increase in the nature connecting pathway condition. While this supports previous findings that nature connectedness is strongly related to vitality, the nature control condition also showed a significant increase in vitality despite non-significantly

increasing nature connection. It was expected that an increase in wellbeing would result from walking in nature as this has been found previously (see Mayer et al., 2009); therefore engaging with nature, without forming a connection with nature can have a direct effect on wellbeing. There was unfortunately a low uptake of participants completing the follow-up component of the study with a total of 21 participants returning data. It is possible that the two month follow up may have revealed a long term effect of the nature connecting pathway condition upon vitality as well as nature connectedness when compared to the nature control condition. There is a need therefore for further longitudinal testing to ascertain the long term benefit of engaging with nature via the mediated pathways on nature connectedness and wellbeing.

Strengths and Limitations

The finding that there was a significant increase in nature connectedness for the participants in the pathway activity condition supports the theoretical model that contact, emotion, meaning, and compassion, mediated by beauty, are pathways to nature connectedness. The research presented in this chapter meets the call of Clayton (2012) for a move beyond the description of nature connectedness with research that investigates application instead. From the outset, it was decided that a nature control group was necessary for the study in order to eliminate the possibility that the nature walk, rather than the pathways, would account for any increase of nature connectedness in the pathway condition. While this was achieved, this condition did show an increase in vitality, which was predicted based on the relationship between time spent in nature and wellbeing benefits (see Russell et al., 2013). Given that a prediction was made, it is acknowledged that this would not usually qualify the nature control condition as a control group; rather it would be a comparative, experimental condition instead. However, the use of this condition as a control group was essential in controlling for the possibility that walking in nature and not the pathways, would lead to nature connection in the pathway condition. The drop-out rate of participants from completing the initial intervention to follow-up was disappointing as only 21 of the original 72 participants (36%) submitted follow up data despite reminder emails being sent. This did not allow the present study to investigate whether there was any long term increases in nature connectedness and vitality. Given that the participants sampled consisted entirely of students and the follow up emails were sent between the months of March to May (the peak assessment time for many) this may have contributed to the high dropout rate seen in this study. The

unfortunate timing of the email reminders was due to the time constraints of attempting to complete the PhD programme of research within the allocated three years; therefore future studies that use a student population ought to take the timing of the follow up and participant's commitments into account. Despite this, the significant increase in nature connectedness and vitality when engaging with nature through the pathways should not be understated as an important finding, given that this is the first time in which the pathways to nature connectedness have been tested within an applied setting. The intervention to increase nature connectedness was brief, consisting of an hour in length without sufficient data to determine if there was any long-term effect on nature connectedness and vitality. The intervention also required a large amount of researcher guidance throughout. It would be useful to investigate whether engaging with the pathways over a prolonged period of time would show any larger and long-term increases in nature connectedness that participants could engage with without a large amount of researcher guidance. Alongside this, exploring the qualitative accounts of participants when engaging with nature via the pathways would highlight the specific experiences that occur from engaging with the pathways that lead to nature connectedness, which should be the focus of future research.

Conclusion

There was a significant overall increase in nature connectedness within the three conditions, with the only significant increase found in the pathway activity condition, supporting the theoretical model presented in chapter five that contact, emotion, meaning, and compassion, with beauty as a mediator are pathways to nature connectedness. Engaging with nature via the pathways also led to an increase in subjective vitality that is a positive outcome in its own right while adding further support that the identified pathways lead to a connection with nature given the strong, positive relationship between nature connectedness and vitality (Capaldi et al., 2014). Given that the study was conducted within an urban location, the results support the notion that urban environments present opportunities to form a positive relationship with nature (Newman & Dale, 2013) as engaging via the pathways led to an increased connection with nature. The results presented in this chapter support the use of contact, emotion, meaning, and compassion, all mediated by beauty, as frames for activities that could be used to increase connectedness to nature by charities and other organisations who wish to promote further engagement with nature and positive wellbeing outcomes for the individual's they work with.

Chapter Summary

The research presented in this chapter has successfully tested the theoretical model created in chapter five that contact, emotion, meaning, and compassion (that were all mediated by beauty), are pathways to nature connectedness. In doing so, a number of aims of the thesis have been met. The identified pathways to nature connectedness have been assessed, with these pathways incorporated into an applied intervention that successfully increased levels of nature connectedness (aim 3 & 4), that in turn also led to increases in vitality, an outcome of being connected with nature (aim 5). The research presented in chapter six is the first to test the potential pathways to nature connectedness in an applied setting; a novel contribution given that this has not been previously conducted within the academic literature. The finding that the identified pathways do increase nature connectedness represents an expansion in knowledge as to which activities lead to a reconnection with nature for humanity; that counter the often held perception that humanity is separate from the rest of nature, a cultural belief that is prevalent in western, industrialised societies (Vining, 2003). However, the intervention presented in this chapter was brief, lasting for an hour in total with a large amount of researcher guidance meaning future research should investigate a longer term engagement with nature via the pathways that participants can engage with only minimum guidance by the researcher. The final quantitative study of the PhD is presented in chapter seven that once again used a quasi-experimental design to engage individuals with nature via the pathways through reflective writing. The study presented took place over a week long time period to see what effect this had on nature connectedness and whether any sustained increases in nature connectedness could be found as a result. The qualitative accounts of engaging with nature via the pathways that was generated from the intervention are presented in chapter eight.

Chapter Seven – Pathway based Reflective Writing as an Intervention to Increase Nature Connectedness

Chapter six presented the first applied testing of contact, emotion, meaning, compassion and beauty as pathways to nature connectedness. Participants who engaged with nature through the pathways had significant increases in nature connectedness. While the intervention provided a confirmation of the theoretical model presented in chapter five, the intervention itself was brief, lasting for an hour in total with a large amount of researcher guidance required. The research presented in this chapter is the final quantitative study of the systematic investigation conducted for this thesis, and investigates the effectiveness of engaging with nature via the identified pathways on increasing nature connectedness, vitality, and pro-environmental attitudes.

Introduction

As noted in chapter two, the wellbeing outcomes of a connection with the wider natural world have been frequently investigated and have been the topic of several large reviews (see Capaldi et al., 2014; Russell et al., 2013 for examples), with studies also reporting pro-environmental outcomes of connecting with nature (Mayer & Frantz, 2004; Nisbet & Zelenski, 2013). Of the wellbeing measures utilised in research on nature connectedness, the wellbeing indicator of vitality has shown the strongest association with nature connection (Capaldi et al.). While the wellbeing outcomes have received a large amount of research attention, the potential routes to nature connectedness are unclear (Zylstra et al., 2014); with research into nature connectedness largely theoretical, with little applied research carried out (Clayton, 2012). Recently, focus has begun to shift toward ways to increase nature connectedness through applied interventions. The approach of noticing three good things in nature (Richardson & Sheffield, submitted) has investigated the effectiveness of noticing nature coupled with creative writing to increase nature connectedness; finding significant increases in connectedness with nature. The research presented in chapter six also addressed the need for applied research into nature connectedness, finding that the pathways of contact, emotion, meaning, compassion, and beauty as identified in chapter five, did significantly increase nature connection after spending an hour with nature. Despite the intervention being successful, the time spent in nature was small, consisting of an hour while also requiring a large amount of researcher

guidance. While this was possible within an experimental setting, if a widespread reconnection with nature is to be achieved, creating activities that individuals can engage with under their own volition will be important given that perceived time pressures within urban environments (Arbuthnott et al., 2014) are thought to be a barrier to engaging with nature (Beery, 2013). In order to complete the systematic investigation of the pathways to nature connectedness that was the purpose of this thesis, a final study that engaged participants with nature over a week long period of time was conducted. The study utilised the pathways once more, with participants engaging with nature through an online creative writing activity that was administered with minimal researcher input. It was predicted that a significant increase in nature connectedness would be found when participants engaged with nature via the pathways that would in turn lead to significant increases in vitality and pro-environmental attitudes.

Method

Design

An independent measures experimental design was once again used, the independent variable being condition with two levels, both focussed on engaging with nature; condition one was through the pathways, condition two without the pathways. The dependent variables were connectedness to nature, vitality and pro-environmental attitudes.

Participants

The effect size of $r = .41$ obtained from the first intervention study presented in chapter six was entered into GPower (Faul et al., 2009) for a sample size calculation, indicating that a minimum sample size of 26 participants was required split between the two conditions. A total of 30 participants were recruited, with four participants excluded from the study due to no post data being provided. The participants within the study had a mean age of 31.73 (17.32 *SD*), ranging from 18 to 73 with a total of 18 females, 7 males and 1 gender not specified taking part. All participants were recruited via social media or the University of Derby Psychology recruitment system, with 17 of the sample being students, with the majority of all participants residing in the UK (95.5%) and living in an urban (42.3%) or suburban environment (34.6%). Participants were required to be over the age of 18 and have access to the internet in order to take part.

Materials

Participants were provided with a link to a Qualtrics survey that contained information, consent, and debrief pages along with the Nature Relatedness scale (Nisbet et al., 2009), the Subjective Vitality scale (Ryan & Fredrick, 1997) and the revised New Environmental Paradigm scale (NEP) by Dunlap, van Liere, Mertig and Jones, (2000). The Qualtrics survey also included instructions on what activity the participants needed to do along with instructions on what to write and spaces to do so for the short writing task for each day.

Procedure

The participants were recruited via social media and the participation recruitment system and after agreeing to take part, were randomly assigned to one of the two conditions. After reading the combined brief and consent form (see appendix 7.2) and agreeing to take part, the participants completed demographic items and measures of nature connectedness, vitality, and pro-environmental attitudes on the day prior to engaging with nature (see appendix 7.3). For the next six days, the participants were emailed each day with instructions for how to engage with nature, with both groups instructed to view nature for at least 10 minutes each day (see appendix 7.4). The definition of nature used for both conditions was adapted from the Nature Connection Indicator (Richardson, unpublished) and read: nature can be any natural environment that includes animals or plants that can be found in towns or cities, in the countryside or further away in wilderness areas. Do not use any substitutes for nature such as virtual scenes, plastic tree's etc. In the pathway condition, participants were given the instruction to reflect on three questions that were designed to utilise the pathways of emotion, meaning, and compassion: 'how does nature make you feel?', 'what meaning can you see in your own life through nature?' and 'why should nature be cared for or protected?' Participants in the non-pathway condition were instructed to engage with nature and to 'write down your thoughts on your experience'. Each day, the participants were sent a reminder to enter their pieces of short writing on Qualtrics with the non-pathway participants having a free text entry (see appendix 7.5), while the pathway participants given the same questions again in order to structure their writing. On the seventh day, after completing the reflective writing task, the participants again completed the nature

connectedness, vitality and pro-environmental attitude measures and were provided with a debrief screen (see appendix 7.6). Two months after taking part, the participants were contacted and invited to take part in a follow-up (see appendix 7.7), briefed as before and then completed the same measures once again before being debriefed for a final time (the follow-up data was not yet available for the submission of the thesis).

Results

The mean overall nature connectedness score prior to taking part was 3.66 (.57 *SD*), that increased to 3.95 (.49 *SD*) after taking part. The mean overall vitality score prior to taking part was 3.62 (1.18 *SD*), that increased to 4.57 (1.22 *SD*) after taking part while the mean overall New Environmental Paradigm (NEP) score prior to taking part was 3.89 (.36 *SD*), that increased to 3.95 (.40 *SD*). The mean nature connectedness, vitality and NEP scores for the three conditions are presented in table 7.1.

Table 7.1 Means and Standard Deviations of Nature Connectedness, Vitality and the New Environmental Paradigm Scores in the Pathway and Nature Control Conditions

Condition	NR Pre	NR Post	Vitality Pre	Vitality Post	NEP Pre	NEP Post
Pathway Activity	3.66 (.63 <i>SD</i>)	3.92 (.52 <i>SD</i>)	3.87 (1.34 <i>SD</i>)	4.55 (1.25 <i>SD</i>)	3.92 (.34 <i>SD</i>)	4.06 (.34 <i>SD</i>)
Nature Control	3.66 (.54 <i>SD</i>)	3.98 (.47 <i>SD</i>)	3.38 (.98 <i>SD</i>)	4.59 (1.24 <i>SD</i>)	3.86 (.39 <i>SD</i>)	3.84 (.45 <i>SD</i>)

The data for nature connectedness, vitality, and pro-environmental attitudes was screened for skewness, kurtosis and outliers with all falling within acceptable parameters. A mixed-methods ANOVA was conducted to determine whether there was an interaction between taking part in the pathway condition or the nature control condition and nature connectedness scores over time. A Mauchley's test demonstrated that the assumption of sphericity had not been violated ($\chi^2(0) = 0.00, p > 0.05$); it was decided that the non-corrected degrees of freedom should be used. The mixed measures ANOVA showed that there was a significant interaction between condition and nature connectedness over time $F(1, 24) = 20.75, p = .001, \omega^2 = .66$. However, the main effect of condition on nature

connectedness was non-significant, $F(1, 24), 0.17, p = .686$. Given that the overall interaction was significant, the data was explored further. Two paired samples t-tests were conducted to investigate the effect of condition on nature connectedness. The pathway activity condition showed a significant increase in nature connectedness ($t(12) = -2.78, p = .009$, (one-tailed), $r = .62$) while the nature control condition also significantly increased nature connectedness ($t(12) = -3.74, p = .002$, (one-tailed), $r = .73$).

A mixed-methods ANOVA was conducted to determine whether there was an interaction between taking part in the pathway condition or the nature control condition and vitality scores over time. A Mauchly's test demonstrated that the assumption of sphericity had not been violated ($\chi^2(0) = 0.00, p > 0.05$); it was decided that the non-corrected degrees of freedom should be used. The mixed measures ANOVA showed that there was a significant interaction between condition and vitality over time $F(1, 24) = 25.06, p = .001, \omega^2 = .69$. However, the main effect of condition on vitality was non-significant, $F(1, 24), 1.95, p = .175$. Given that the overall interaction was significant, the data was explored further. Two paired samples t-tests were conducted to investigate the effect of condition on vitality. Both the pathway activity condition ($t(12) = -2.70, p = .010$, (one-tailed), $r = .61$) and the nature control condition significantly increased vitality ($t(12) = -4.30, p = .001$, (one-tailed), $r = .78$).

A mixed-methods ANOVA was conducted to determine whether there was an interaction between taking part in the pathway condition or the nature control condition and pro-environmental attitude scores over time. A Mauchly's test demonstrated that the assumption of sphericity had not been violated ($\chi^2(0) = 0.00, p > 0.05$); it was decided that the non-corrected degrees of freedom should be used. The mixed measures ANOVA showed that there was a non-significant main effect of condition on pro-environmental attitude over time $F(1, 24) = 3.06, p = .093$. However, the interaction between condition and pro-environmental attitude was significant, $F(1, 24), 6.67, p = .016, \omega^2 = .43$. Two paired samples t-tests were conducted to investigate the effect of condition on pro-environmental attitude. The pathway activity condition showed a significant increase in pro-environmental attitude ($t(12) = -3.25, p = .004$, (one-tailed), $r = .68$) while the nature control condition had a non-significant effect on pro-environmental attitude ($t(12) = .56, p = .292$, (one-tailed)).

Discussion

Engaging with nature while reflecting on the pathways led to significant increases in nature connectedness and vitality; in keeping with the results obtained in chapter six. While the nature control group in chapter six showed only significant increases in vitality, the participants in the control group in this study also had significant increases in nature connectedness. The results go some way to supporting previous research that has linked emotion (Muller et al., 2009), meaning (White, 2012) and protecting nature (Lewis & Townsend, 2014) based activities as leading to a positive relationship with nature; the significant increase in nature connectedness in the control group indicates that other factors may also be important. Given that in both conditions participants were instructed to engage with nature by viewing nature, it is possible that the pathways of contact and beauty may have inadvertently been utilised by participants within the control condition that in turn led to an increase in nature connection. Future research ought to explore the overlap between the pathways to better understand the interactions that may be present. The wellbeing benefits of nature connectedness were supported (Russell et al., 2013) given that vitality increased significantly in both conditions; a finding which supports the previous finding that vitality has the strongest association with nature connection (Capaldi et al., 2014). Previously it has been thought that residing within urban environments may lead to the extinction of nature experiences (Pyle, 2003). Given that the majority of participants within this study (and that presented in chapter six) resided within either urban or suburban environments, and were able to increase their connection with nature, the assertion that the nature present within urban locations can still lead to nature connecting experiences is supported (Newman & Dale, 2013). While both conditions led to an increased connection with nature and vitality there was one notable difference between the two conditions; engaging with nature via the pathways led to a significant increase in pro-environmental attitudes, something that did not result from engaging with nature within the control group (which decreased). This supports research that has linked nature connectedness with increased pro-environmental attitudes (Mayer & Frantz, 2004; Nisbet & Zelenski, 2013), and suggests that the pathways not only increase nature connectedness and vitality but pro-environmentalism also. It is noted that within the pathway condition, the compassion question may have potentially primed participants into forming more positive pro-environmental attitudes. A qualitative analysis of the reflective writing within the pathway condition is required to ascertain whether compassion was

acting as a pathway to nature connectedness or functioned solely as a primer for pro-environmental attitudes.

Strengths and Limitations

The research provided an accessible way for participants from any location to engage with nature in order to experimentally test the effect of the pathways on nature connectedness. Participants were required to engage with nature and write reflectively each day for six days. Unfortunately, two participants within the pathway condition did not submit any reflective writing for day five, but did submit for all other days. While it is expected that these participants did still engage with nature but simply forgot to submit their reflections, it would be prudent to ensure all participants fully engage with the task in future studies. The study presented within this chapter has however met the need to find ways to establish a connection with nature (Arbuthnott et al., 2014; Zylstra et al., 2014) that utilised an applied, rather than theoretical methodology (Clayton, 2012).

Chapter Summary

In keeping with the findings presented in chapter six, the pathways when experimentally tested, led to significant increases in nature connectedness and vitality (aim 4 & 5) although significant increases were also found within the nature control condition. While both the pathway and control conditions led to significant increases in nature connectedness and vitality, the pathways alone led to a significant increase in pro-environmental attitudes (aim 5). Given that there is the potential issue of priming of pro-environmental attitudes from the compassion question for participants in the pathway condition, chapter eight presents a qualitative analysis of the reflective writing from this condition. This will not only finish the programme of research for the thesis in a holistic manner but also ascertain whether compassion was acting as a primer for pro-environmental attitudes, while also revealing the nature connecting experiences that occurred through the pathways.

Chapter Eight – Reflections on Nature through Contact, Emotion, Meaning, Compassion, and Beauty for Nature Connectedness

The quantitative component of the systematic investigation into the pathways to nature connectedness concluded with an online intervention that engaged participants with nature through reflective writing tasks structured around the identified pathways. While the significant increase in nature connectedness, vitality and pro-environmental attitudes from reflecting on the pathways are useful findings, the reflections written by the participant also contain a wealth of important experiential data that should be explored. The following chapter presents a Content Analysis of the reflective writing taken from the final research study of the thesis.

Introduction

The programme of research that has been presented within this thesis has systematically investigated the potential pathways to nature connectedness using a number of different methodologies. Chapter four presented three focus groups, from which emerged seven potential pathways which were further refined in chapter five through two online surveys to the final five pathways; contact, emotion, meaning, compassion, and beauty. The identified pathways were then tested in two experimental studies, the first conducted as a face-to-face intervention, the second as an online creative writing task; both of which found significant increases in nature connectedness through the pathways. Of the five research studies presented, four utilised quantitative methodologies with only the initial study in chapter three exploring the experiences of individuals from a qualitative viewpoint. While quantitative investigations are useful, the subjective experiences that occur when engaging with nature that other methodological approaches can provide are also needed (Hinds, 2011). This is especially important given that a significant increase in pro-environmental attitudes occurred through reflecting on the pathways (but not in the control condition), while significant increases in nature connectedness and vitality were also found. While significant increases in pro-environmental attitudes were found, there was the possibility that the question on helping nature used to represent the pathway of compassion primed participants towards scoring

higher on the NEP scale (Dunlap et al., 2000). Analysing the reflective writing pieces from the pathway condition using a qualitative methodology could help to ascertain whether the pathway of compassion (along with the other pathways) is linked to pro-environmental attitudes rather than a priming effect occurring. More importantly, the reflective writing may hold important experiential accounts of the nature connecting experiences that occurred when engaging with nature through the pathways; accounts that would add a deeper context and level of understanding to the systematic investigation that was the purpose of this thesis. Written accounts by individuals when engaging with nature have previously provided insight into the good things in nature for participants; namely sensations, beauty, growth, weather and temporal changes (Richardson et al., 2015).

Exploring the experiences and reflections of individuals when they engage with nature specifically via the identified pathways would allow for a holistic understanding of the routes to nature connectedness. This approach fits in with that initially outlined for this thesis, one that avoided exclusively focussing on the quantifiable mechanisms that have often caused a further separation between humanity and nature by missing any dynamic interactions that are present (Scofield & Margulis, 2012). Instead this thesis has sought to investigate the individual as part of a larger whole, whereby the individual is influenced by the environment and in turn, influences the environment in which they exist (Bateson, 2002). This would be achieved through an enactive phenomenological approach (Thompson, 2007) that moves away from objectification and categorisation, towards the construction of reality through relational encounters or events (McPhie & Clarke, 2015). This approach draws upon the lived experience, with any data understood within a wider gestalt (Bateson, 2002). This chapter therefore presents a Content Analysis of the reflective writing participants provided when engaging with nature in the intervention study from chapter seven; offering a holistic insight and experiential evidence for contact, emotion, meaning, compassion, and beauty as pathways to nature connectedness.

Method

Participants

A total of 13 participants took part in the pathway condition of the study with a mean age of 24.46 (8.16 *SD*) ranging from 18 to 41 with a total of 10 females (3 male) taking part. The majority of participants lived in an urban (56%) or suburban (23%) location with the remainder from a semi-rural (23%) environment, with 12 participants

living in the UK and one in China. All participants were recruited via social media or the University of Derby Psychology recruitment system with 11 participants in the sample being students. Participants were required to be over the age of 18 and have access to the Internet in order to take part.

Procedure

After signing up by email and agreeing to take part in a study entitled ‘spending time in nature’ and completing quantitative measures (see chapter seven), the participants were emailed for six days and instructed to spend ten minutes each day engaging with nature. The emails contained a definition of nature (see chapter seven) along with instructions to either write freely their reflections on their experiences or answering three set questions: ‘how does nature make you feel?’, ‘what meaning can you see in your own life through nature?’ and ‘why should nature be cared for or protected?’ Also contained within the email was a link to a form on Qualtrics for the participant to enter their daily reflective pieces. On the sixth day, participants entered in their final written reflections, completed the same quantitative measures as before and were debriefed.

Coding of the Data

Content Analysis is a technique that produces valid and reliable inferences from text that provides new insights for the researcher (Krippendorff, 2004) and can be used for an existing phenomenon that is in need of further description (Hsieh & Shannon, 2005). Texts used within Content Analysis are often not only meaningful to the researcher but for the author and those that read them too, with a large contribution made by the researcher as to what counts as content (Krippendorff, 2004). A directed approach was employed, utilising existing theory to inform the analysis in order to extend or validate the theory employed or to provide counter evidence against existing theory. It is acknowledged that there is the possibility of inherent bias from the researcher when using a directed approach (Hsieh & Shannon). However, the data was generated using questions derived from the theoretical pathways used for the analysis and along with the auditable paper trail (Hsieh & Shannon), should limit the effect of any inherent bias (see appendix 8.3 and 8.4). The data analysis began by identifying key concepts based on existing research to be used as initial coding categories with operational definitions created for each and are presented in table 8.1. Aspects of the text which met the operational definitions were highlighted after reading the text, if any text could not be categorised

then a new code was created and assigned. From this a total of 33 codes were created. The frequency of each code was noted with the codes then assigned to categories that created themes which describe the focus of the participant’s reflections when engaging with nature via the pathways.

Reflexivity

Only a single researcher was involved in the analysis, aided by the programme NVIVO10, given that the volume of text was not considered to be overwhelming (Krippendoff, 2004). It is noted that despite the use of NVIVO10 to aid in the analysis of the text, the exploration presented within this chapter is of a single analyst’s interpretation and as such, will contain elements of the researcher’s own experience and bias while representing the lived experience of the text’s original author.

Table 8.1 Operational Definitions Used for Coding

Key Concept	Operational Definition
Contact	The act of meeting with nature through the physical senses
Emotion	An affective state or sensation that occurs as a result of engaging with nature
Meaning	Using nature or natural symbolism to communicate a concept that is not directly expressed
Compassion	Extending the self to include nature, leading to a concern for other natural entities that motivates understanding and helping/co-operation
Beauty	The perception of aesthetic qualities including shape, colour and form that please the physical senses

Results

The content analysis of the reflective writing based on the pathways produced nine themes which are detailed below, with the frequency of the themes provided in table 8.2.

Calm and Restoration from Nature: This theme contained the code occurring most frequently within the analysis of the sense of calm that resulted from being in nature

'taking time out of my usual schedule to spend time in nature made me appreciate the calm and quiet surroundings and enabled me to forget about my worries temporarily'. The calm and restoration nature provided was born from the sense of escape from daily living in statements such as 'allowing us to escape from our busy and often rushed lives' and 'it is important to take breaks from life and enjoy nature'. The source of this escape and calm came from animals 'the bird song made me feel very peaceful and less stressed', features 'relaxed due to calm water', fauna and the weather 'looking at nature (trees) and feeling sunshine on my face definitely had a calming effect on me'.

Meaning: This theme directly related to one of the pathways as some participants described finding meaning in nature through communication 'I heard animals...and insects...communicating messages which I couldn't even begin to understand, it would be amazing to understand what was being conveyed and expressed'. Meaning was also found from the examples of animals 'animals don't question why they grow or do anything, they just do' and plants 'plants look like they seem lonely but...they are getting comfort and support from their surroundings...people are like this...they want the comfort of others but maybe in ways that others can't see'. In addition, seasonal change also provided an opportunity to find personal meaning 'changing appearance of the trees as the cold weather approaches reflects how my own appearance changes to suit the weather'. A sense of freedom was also frequently described both from nature 'I feel far more free when in touch with nature' and by nature 'I noticed how free nature is and it made me realise our own choices are very limited'. Growth was another aspect related to meaning in nature, with seeds and plants representing 'the need to grow and develop' personally. However, not all participants could find meaning in nature 'I couldn't see a meaning in my life through nature' possibly due to a disconnection 'I don't think the meaning of my life is connected to nature'.

Responsibility: This theme encapsulated the responsibility to take care of nature due to the harm caused by humanity 'humans need to take responsibility for the changes they make and the affect it has on the species that are there now' as part of a moral obligation 'It's our duty as higher mammals'. This obligation to protect nature was achieved through advocating on nature's behalf 'I still see myself as a "voice" for nature that should educate others on safe practices and how to look after nature' and through the exercise of our standing as a species 'humans possess the power to look after it we should before it is too

late'. The responsibility to protect nature was motivated for some by personal gain rather than any sense of compassion for nature 'if nature is not protected eventually we will not be able to survive' and 'to preserve nature for the future generations'.

Weather and Seasonal Change: Weather was a frequently occurring object of the reflective writing 'weather was very nice, lots of sunshine' which had a positive 'sunny weather made me feel warm and energised' and negative 'it was raining, so it made me feel a little sad' effect on wellbeing. Colour was explored in conjunction with the weather 'even though it was gloomy today, there was still colour in the trees' while seasonal changes led to appreciation 'crisp weather today made me feel like Autumn has really begun and I felt appreciative of the change of season'.

Emotion: This theme expressed positive emotions using words such as 'happy', 'enjoy' and 'amazed' and negative affective states 'indifferent' and 'impartial today'. Overall, positive emotions were conveyed 'feeling joyful and fulfilled in watching nature and having the privilege to share in the space of the amazing other species' and emotional attachments were formed 'I am bonding with nature'. Sensations of love and awe were described 'a state of wonder, loving, and in awe' and appreciation 'spending more time in nature has made me feel very grateful for the position I am in my life...easy access to green spaces and woods where I can escape too; and in terms of having time to think and reflect and realise how lucky I am'.

Connection: Statements were written that conveyed nature as a part of the self 'I am a part of nature' and similar to humanity 'the chameleon appeared to be a complex biological being, similar to a person because [we] are also complex'. A connection with nature from a biological 'there are so many different forms of life...that share basic biology with us' and perceptual view 'I am part of a bigger society' were described. The sense of a connection with nature described humanity as not superior to nature 'without humans, nature could quite happily carry on and survive and perhaps many would say, thrive' but rather equal to wider nature 'nature is important. It has no less a purpose of existence as do I'. This led to some feeling like a small part of a much greater whole 'I am a small part of a big puzzle' with the scope and enormity of the connections within nature wondrous for some 'nature...at times it is impossible to comprehend. So today I felt amazed and overwhelmed by nature'. The weather was also a re-occurring theme for connection, where this aspect of nature led to a disconnection for some participants 'rather annoyed at

being in the cold and damp and not very connected to nature' while leading to a connection for others 'the same as the animals really, despite bad weather I still have jobs to do and commitments to fulfil so in a way I'm exactly the same as nature'. While there were frequent references to nature connectedness, some participants struggled to connect 'due to stress today I didn't feel part of the nature I was surrounded by...I felt very disconnected and separate from nature today' as humanity was perceived as a separate other, no longer governed by natural laws 'except for modern day humans, life exists through natural elements'

Compassion: Compassion differed from the theme of Responsibility as nature was not protected out of a moral obligation or for personal gain but as the result of co-operation 'I could see meaning in protecting other, just as the trees protected me from the rain' similarity 'nature is who we are as humans therefore we should look after every aspect of us', empathy 'every animal and plant has a purpose and feels feelings' and attachment 'care for and protect them as they are my family'. Compassion was not only directed toward nature as through nature, self-compassion was found 'connectedness made me feel that I could be liked and help another animal' along with a sense of purpose 'I suppose it makes me feel needed and useful for something'.

Beauty: This theme encapsulated noticing nature within urban locations 'I live in a heavily populated city, and it has really amazed me how much nature there is basically on our front door and all around us' that led to new insights 'I really noticed that nature is constantly moving'. Watching the pleasing aspects of nature led to positive emotional responses 'watched woodpecker on bird feeder, felt privileged...experienced feelings of wonder and amazement at it and its design'. Participants advocated the need to protect nature because of its beauty 'it is beautiful. We protect famous art so why not nature?' with nature perfect in its own way 'when you actually look at it, nothing is symmetrical or straight; I love that about nature and made me feel a total sense of awe'.

Contact: Described a direct engagement with nature 'I went out for a walk', viewing 'staring at the trees' and meeting nature 'privileged that the animal interacted with me'. Contact was also achieved through engaging the senses of smell 'I was able to tune out the noise of the traffic and construction work and focus on the movement of the plants and the smell of the vegetation, which made me feel alive', hearing 'the bird song' and sight 'spent time looking at a Chameleon'. The manner of engaging with nature was not

always conscious ‘for some reason I was drawn to the small park but I did not even realise it until afterwards’ but once in contact, participants did not want the experience to end ‘I enjoyed the quietness, almost serene...and felt like just staying there’. Childhood experiences were mentioned ‘I grew up as having a land where there were many trees and a little field where I could play’ with reflections on the need for those living in urban environments to engage with nature ‘people who live in big, built up areas still get to experience a little bit of nature, e.g. Parks’. A sense of discovery was also present as nature was something to be investigated through contact ‘travel different paths to see what I can discover’ so that more could be learned about the self and wider nature ‘there's so much we don't know about ourselves and our planet; our full potential is unknown’.

Table 8.2 Table Outlining the Frequency and Percentage of the Nine Themes from the Analysis

Theme	Frequency	Percentage
Calm and Restoration from Nature	76	19.24
Meaning	49	12.41
Responsibility	46	11.65
Emotion	45	11.39
Connection	42	10.63
Weather and Seasonal Change	41	10.38
Compassion	38	9.62
Contact	30	7.60
Beauty	28	7.09

Discussion

This thesis has investigated the routes to nature connectedness, identifying contact, emotion, meaning, and compassion with beauty as a mediator as pathways to nature connection. Contact with nature through walking (Mayer et al., 2009) and outdoor pursuits (Martin, 2004) have previously been linked to connectedness while an emotional affiliation to nature is related to the formation of nature connectedness in childhood (Hinds & Sparks, 2008) that can endure into adulthood (Capaldi et al., 2014). Meaning has been linked to a deepening of the nature connecting experience through symbolism (White, 2012) and transpersonal experiences (Zylstra, et al., 2014). Environmental ethics have been found to lead to nature connecting experiences (Lewis & Townsend, 2014) that may arise from a compassion for another (in this case nature); leading to empathy, helping behaviours, and self-compassion (Gilbert, 2014). This is especially important for the

results presented in chapter seven, with the pathways leading to an increase in pro-environmental attitudes. Given that compassionate helping and perspective taking emerged within the analysis, this would explain why the pathway condition led to an increased NEP score; not as a result of priming but due to compassion for nature instead.

Along with the expected themes of contact, emotion, meaning, compassion, and beauty, themes of connection, weather and seasonal change, responsibility, and calm and restoration emerged from engaging with nature via the pathways to nature connectedness. The most frequent theme from the content analysis was that of the calm and restoration experienced when engaging with nature, supporting previous evidence that the natural environment facilitates the restoration of mental resources (Kaplan, 1995). The theme of meaning where participants described abstract communication with nature that may have been transpersonal in nature (Zylstra et al., 2014) while commenting on growth (Richardson et al., 2015) and belonging to a wider community with nature (Mayer et al., 2009) add further support to meaning being a pathway to nature connectedness. Finding meaning in nature was not universal for all however as several participants described being unable to find any meaning when engaging with nature; possibly explaining why meaning was an inconsistent pathway in chapter five.

A personal responsibility to protect nature through pro-environmental action (Nisbet et al., 2009) was described by some of the participants that may have led to connecting experiences (White, 2012). While feeling responsible to protect nature may have led to connectedness, for some the responsibility was motivated by personal gain which is at odds with the equal valuing of all life that nature connectedness implies (Schultz et al., 2004), regardless of any utilitarian value (Barbier et al., 2011). In contrast to helping nature for personal gain, compassion emerged within the analysis, with participants writing about their empathy and attachment for nature that led to a desire to protect nature while in turn having self-compassion (Gilbert, 2014). The compassionate feelings of helping nature as a similar other further support compassion as a pathway to connecting with nature, however the mixed experiences of the participants, for some wanting to help nature for utilitarian gain while others from compassionate motivations warrants further enquiry.

Weather has previously been identified as a good thing in nature (Richardson et al., 2015) that was found again within this analysis. While weather was linked to positive emotions and connection in keeping with previous results, negative affective states as a result of the weather were also described. Beyond the weather, emotion did emerge as a theme in its own right, with positive emotions such as joy and awe leading to a bonding with nature; similar to an emotional affiliation that is important for nature connectedness (Hinds & Sparks, 2008). Reflection was also contained in this theme, itself linked to nature connectedness (Richardson & Sheffield, 2015) with participants reflecting on being fortunate to have access to natural spaces and therefore appreciative of nature. Connecting with nature was, understandably, contained in the theme connection for the participants after engaging with nature via the pathways. Nature was described as being part of the self-concept (Schultz, 2001) with participants describing humanity as being no more important than other aspects of nature (Schultz et al., 2004) as humanity was but one part of a wider community (Mayer et al., 2009). The sensation of connection was not universal for all however, with some participants struggling to feel connected due to stress, even when engaging with nature through the pathways. If the ability to use effective, directed attention is hampered (perhaps as a result of stress), any attempt to find respite from the stressor or to find a solution to the problem will not be possible (Kaplan, 1995); thus without effective, directed attention, an individual may not notice nature effectively in order to utilise the pathways and connect with nature.

Beauty was previously found to be a mediator of the other pathways and was another theme that contained descriptions of awe and amazement for nature, again echoing previous findings (see Richardson et al., 2015) as well as the theme of noting nature through artistry from the focus group study presented in chapter four. While there is some overlap between the theme of beauty emerging from this analysis and the above theme from chapter four, the initial focus group study also contained the theme of creating idyllic nature which described preference for ordered and ideal nature as a facilitator for nature connection experiences. The theme of beauty in this analysis differs from the theme of creating idyllic nature as instead of the desire to see elements of nature in an ordered manner, aspects of nature were beautiful and awe inspiring even if they did not conform to notions of perfection or symmetry. The discrepancy may be explained by the emphasis of the two chapters. Chapter four examined the potential pathways to nature connectedness from the perspectives of 11 individuals who engaged with nature through

one of the nine values of biophilia, whereas the experiential accounts of the participants in this chapter are the result of engaging with pathways that have been found to lead to nature connection. The accounts from chapter four are from a cognitive perspective; the accounts from this chapter are experiential instead. Contact emerged as a theme that described engaging with nature through the senses, again echoing a theme from chapter four in the form of engaging with the senses. Participants also described contact as leading to vitality, a facet of wellbeing previously found to have the strongest link of all the wellbeing measures to nature connectedness (Capaldi et al., 2014). This suggests that having contact with nature through the physical senses not only leads to a connection with nature but plays a role in any experience of vitalisation as a result. A desire to explore nature through contact was also present which echoed the investigating nature through scientific enquiry theme from chapter four. While both advocated investigating/exploring nature, the theme from the Content Analysis focussed on investigating both nature and the self through physical exploration rather than through a scientific methodology.

Strengths and Limitations

Given the link to wellbeing (Capaldi et al., 2014) and pro-environmentalism, understanding the routes to nature connectedness are important (Arbuthnott et al., 2014), with this Content Analysis providing a deeper exploration of the pathways to nature connectedness. The analysis undertaken has further contributed to the holistic enquiry (Bateson, 2002) that is needed to fully investigate the pathways to nature connectedness. This was achieved by exploring the subjective experiences that occur when engaging with nature that only a qualitative account could provide (Hinds, 2011). It is acknowledged that the analysis was performed by a researcher who had prior knowledge of the pathways that may have influenced the themes which emerged. However, given that contradictions emerged within the analysis of the reflective pieces provided by the participants, which partly contradicted the pathways of meaning, compassion, and emotion, this suggests that researcher bias was not an issue; as the themes and contradictions they contain provide a deeper understanding of the identified pathways. The pathways to nature connectedness have been investigated as one group, with the themes emerging from this analysis highlighting that not only do participants have differing experiences when engaging with nature via the pathways but that the pathways have individual mechanisms yet share some overlap with one another and in how nature connectedness may be encouraged. Future research into the identified pathways ought to explore further the overlap between contact,

emotion, meaning, compassion, and beauty using a similar mixed methods approach. Alongside this, it is acknowledged that the importance of childhood experiences for the formation of nature connectedness and subsequent connectedness in adulthood (Hinds & Sparks, 2008) was not controlled for in either the quantitative or qualitative aspects of this study, with the participants not asked about past experiences with nature. Future research ought to control for the possible effect of childhood experiences when exploring the pathways in future. In addition, the effect of restorative aspects of nature on the effectiveness of the pathways in increasing nature connectedness should also be explored further. Most importantly, the themes emerging from the analysis highlight that individuals can readily engage with nature through the pathways and that in turn, nature connecting experiences occur as a result of this focussed engagement with nature.

Conclusion

The nine themes emerging from the Content Analysis support previous findings that contact, emotion, meaning, compassion, and beauty are pathways to nature connectedness. While there was support for the pathways, there were some unexpected findings of weather having a negative effect on emotional states while caring for nature was motivated by personal gain rather than compassion for a selection of the participants. A finding with important implications was that of the calm and restoration that nature provided from stress for the participants, with stress acting as a barrier to being able to connect with nature. Despite barriers being present however, the themes emerging from this analysis have revealed insight into the experiences that occur when engaging with nature through the pathways of contact, emotion, meaning, compassion, and beauty. Engaging with the pathways leads to nature connection, suggesting that while the capacity to connect with nature may be shared by all, the proper prompts through the pathways are needed to help facilitate the experiences that lead to nature connectedness and the associated benefits of wellbeing and pro-environmentalism.

Chapter Summary

This chapter has provided an exploration of the experiences of 13 participants when engaging with nature via the pathways of contact, emotion, meaning, compassion, and beauty. The Content Analysis led to the emergence of nine themes which supported previous findings that the identified pathways are involved in nature connecting experiences (aim 4). The research presented in this chapter is the final component of the

holistic investigation that was undertaken for this thesis, covering five research studies, which have provided support for contact, emotion, meaning, compassion, and beauty as pathways to nature connectedness. The results and implications of which are discussed in chapter nine.

Chapter Nine – Discussion

Chapter one at the outset of the thesis presented five aims that were to be used to guide the systematic investigation into the pathways that lead to a connectedness with nature. Aims 1 and 2 sought to explore and investigate the relationship between the nine values of the Biophilia Hypothesis and to identify potential pathways to nature connectedness from an investigation of this relationship. This was achieved initially in chapter four, where seven potential pathways to nature connectedness were identified from the initial focus group study; a scientific enquiry of nature; engaging the senses; creating idyllic nature; noting nature through artistry; conservation of nature; growing food; engaging with wild nature. This initial enquiry was built upon further in chapter five as the seven pathways were then refined in two online surveys to five potential pathways; contact, emotion, meaning, compassion, and beauty. The regression model accounted for between 58-64% of the variance of nature connectedness, suggesting that the identified pathways account for over half of the nature connectedness scores. Aim 3 sought to create interventions using the identified pathways while aims 4 and 5 focussed on investigating whether the pathways would increase nature connectedness, wellbeing, and pro-environmental attitudes. All three of these aims were met, firstly in chapter six where the pathway model was tested, finding a significant overall interaction of condition on nature connectedness, with the pathway activity condition significantly increasing a connection with nature. While the results showed a significant increase in nature connection, the short length of time and need for face-to-face researcher direction was a concern, given that time pressure and lack of nearby nature may lead to a disconnection within urban populations, making such an intervention potentially impractical. This led to a final intervention study that met aims 3, 4 and 5 and was presented in chapters seven and eight in the form of a creative writing task that engaged participants with nature via the pathways without direct researcher guidance over a week long period. A quantitative analysis showed a significant increase in nature connectedness, pro-environmental attitudes and vitality when engaging with nature via the pathways, with the Content Analysis highlighting individual nature connecting experiences through contact, emotion, meaning, compassion, and beauty.

This final chapter will initially discuss biophilia in relation to the five pathways to nature connectedness (aims 1 and 2), moving then to an examination of the effectiveness

of the interventions using the pathways to enhance nature connectedness and the benefits of wellbeing and pro-environmental attitudes (aims 3, 4 and 5), before outlining the potential applications of the pathways within wider society by charities, non-governmental organisations as well as the educational and private sector.

The Pathways to Nature Connectedness and Biophilia

The research presented in chapters four and five utilised the nine values of biophilia that cover the range of humanity's interaction with nature (Kellert, 1993) as a framework for the investigation of the pathways to nature connection. The theoretical links between the hypothesis and the Nature Relatedness scale (Nisbet et al., 2009) and the Love and Care for Nature scale (Perkins, 2010), and with biophilia acting as a catalyst for recent research into the human-nature relationship (Hartig et al., 2011) made the nine values a suitable framework for investigating the pathways to nature connectedness. While comparisons were drawn between seven of the values of biophilia in chapter four, and five of the values in chapter five (see table 7.1), not all of the values of biophilia had comparable pathways to nature connectedness. While biophilia was used as a framework for the systematic investigation of the pathways to nature connectedness, the identified pathways are distinct from the nine values of the Biophilia Hypothesis. Biophilia is a separate construct to nature connectedness, with the former representing a biologically evolved tendency to affiliate with life (Frumkin, 2001; Kellert & Wilson, 1993; Windhager et al., 2010), the latter addressing a current erroneous cultural separation from nature stemming from the western philosophical tradition (Lamb, 1996; Russell et al., 2013) and human exemptionalism (Catton & Dunlap, 1978).

Table 9.1: A Comparison of the Nine Values of Biophilia and the Pathways to Nature Connectedness

Biophilia Mapping	Pathway	
	Chapter Four	Chapter Five
Ecologicistic-Scientific	Scientific enquiry of Nature	None Found
Naturalistic	Engaging the senses	Contact
Dominionistic	Creating idyllic nature	None Found
Aesthetic	Noting nature through artistry	Beauty (Mediator)
Moralistic	Conservation of nature	Compassion
Utilitarian	Growing food	None Found
Humanistic	Engaging with wild nature	Emotion
Symbolic	None Found	Meaning
Negativistic	None Found	None Found

Avoiding, Using or Controlling Nature and Nature Connectedness

At first glance, avoiding, controlling or using nature as a resource are the foundations of the domination over, and the exploitation of nature (Kahn, 1997) that is prevalent within western society in the 21st century. This is in direct contrast to the sensation of belonging to a wider natural community (Mayer et al., 2009) with all life having value (Schultz et al., 2004) that is the essence of nature connectedness. It was expected that activities from the negativistic, utilitarian and dominionistic values would not be pathways to nature with activities that controlled or used nature as a resource not emerging as significant predictors in the first study presented in chapter five, with those activities that avoided nature negatively related to nature connectedness (that was significant) in the first study, with this negative relationship found once again in the

second study from that chapter. While avoiding nature did not emerge as a pathway in chapter five, both a use of nature and dominance over it were themes that emerged from the analysis of the focus groups in chapter four. The theme growing food shared similarities with the utilitarian value of biophilia as both advocate the nurturing of plants and crops that provide nourishment as a way of engaging with nature. Where the biophilic value focuses purely on survival, the theme of growing food espoused a reconnection with the source of their sustenance through the nurturing of a part of nature that was an addition to, rather than the sole means of the participants' survival. The use of nature did not emerge however as a pathway in chapter five. This may be due to consumptive activities such as hunting or fishing being unrelated to an environmental identity, due to the focus on the exploitation of nature rather than on the aesthetic appreciation that are inherent in contact activities including nature photography or hiking (Berns & Simpson, 2009). The dominionistic value was also encapsulated in the theme of creating idyllic nature. The theme described the participants desire to connect with particular aspects of nature where personally owned natural spaces such as gardens were purposely arranged to imitate nature yet still controlled exclusively by the individual. Creating idyllic nature echo's previous work by Freeman et al., (2012) who found participants struggled with the messiness of nature and so preferred the order of a garden space that does not take its own developmental course. The dominionistic value encapsulates the control over nature through physicality and the use of technology that would be required in the shaping of natural spaces such as gardens. While a control over natural spaces was present within the theme of creating idyllic nature, dominance over the natural space was not the goal. Rather the shaping of nature was enacted to create a space that would facilitate restoration based on an individual's personal preferences that involved some control over nature by arranging the natural space to fit an ideal.

Knowledge, Identification and Nature Connectedness

A long standing belief held by many organisations and charities is that environmental education is a useful tool for protecting nature as learning and understanding will lead to pro-environmental behaviours (Lieflander et al., 2012). Following along the same lines, educational programmes have been used to combat the growing disconnection between humanity and nature by developing an environmental sensitivity (Ernst & Theimer, 2011), a concept similar to nature connectedness. In the focus group study presented in chapter four, the theme of a scientific enquiry of nature

was described as leading to nature based vocations and sense of connectedness in adulthood. The theme described how a connection to nature developed either as a result of investigating various species in childhood or through scientific enquiry in adulthood, where the interconnections between all living things revealed how related all of nature is. The accounts of some of the focus group members in the theme are similar to the ecologicistic-scientific value of biophilia, with both describing how the scientific study of nature would lead either to an affiliation (biophilia) or connection (nature connectedness) with the species being studied. On the surface this would indicate that engaging with nature through knowledge or identification based activities would act as a pathway to nature connectedness. Previous studies that have used activities such as the classification of species (Lieflander et al.) or general environmental education programmes (Ernst & Theimer) have failed to find long-term increases in nature connectedness through such approaches. The emphasis on learning may have detracted the children from forming an emotional connection with nature (Ernst & Theimer) while any increase in nature connectedness may have arisen from drawing on the pathways (such as contact) inadvertently. Traditionally, environmental education utilises textbook learning which often fail to represent nature's complexity and unintentionally reinforce humanity as an abstraction and a separate entity from nature (Antal & Drews, 2014). Activities that focused on gaining knowledge through the scientific method did not emerge as a significant pathways in chapter five, supporting the notion that knowledge and identification do not connect individuals with nature. It is perhaps the method of engaging through education initiatives that is the problem, rather than learning itself. Experiential learning through contact with nature has been shown to be important for developing nature connectedness in children (see Bruni et al., 2015; Gray & Birrell, 2015) and adults (Mace et al., 2009); further explaining why pure knowledge based activities did not emerge as pathways to nature connectedness in chapter five.

Despite the utilitarian, dominionistic and ecologicistic-scientific values of biophilia having comparable pathways identified in chapter four, neither control over nature nor focussing on knowledge and identification should be accepted as pathways to nature connectedness. The pathways presented in chapter four emerged from an initial investigation of the potential routes to nature connectedness from the perspective of 11 individuals, which utilised the nine values of biophilia as a framework for the exploration. The seven pathways emerging from the analysis were a useful foundation for the

subsequent quantitative investigation of chapter five that refined the pathways down to contact, emotion, meaning, compassion, and beauty. It is these pathways that should be accepted as identified routes to nature connectedness and used as frames when engaging people with nature in order to counter the current disconnect between humanity and the natural community to which it belongs.

Contact (The Naturalistic Value)

Contact with nature as a pathway to nature connectedness has been a consistent finding within the body of research presented, first encapsulated in the engaging with nature theme in chapter four while contact emerged as a consistent, significant pathway in chapter five. Current estimations place around 50% of humanity as living within an urban environment (Lin et al., 2014) therefore contact with urban nature (Newman & Dale, 2013) will be essential in countering the current disconnect between humanity and nature as a result of a lack of meaningful experiences with nature (Pyle, 2003). The desire to engage and ability to have a positive engagement with nature has been thought to depend upon childhood interactions with nature that have been associated with an emotional attachment to nature (Hinds & Sparks, 2008) as this predicts future contact with nature in adulthood (Muller et al., 2009). This contact with nature in adulthood has taken the form of zoo visits, eating green vegetables (Muller et al.), outdoor pursuits including walking (Mayer et al., 2009) and hiking (Martin, 2004) as well as gardening (Freeman et al., 2012); with all being linked previously with a connection to nature. Nature connection also correlates with time spent outdoors (Nisbet & Zelenski, 2013; Nisbet et al., 2008) while specific activities including bird watching and walking in nature associated with the sensation of belonging to the natural landscape (Beery, 2013).

Within the online surveys in chapter five, only the value of participating in contact activities was a pathway to nature connectedness, with actual participation in contact activities not emerging as a significant pathway. Contact with nature is an important aspect of nature connectedness as meaningful nature experiences are only possible through contact with nature (Pyle, 2003). The finding that only valuing contact with nature rather than actual contact with nature led to nature connectedness may potentially be explained by a current lack of opportunity versus previous childhood experiences. The value of nature and its relationship to nature connectedness may have tapped into positive childhood experiences and while it has been found that this predicts an engagement with

nature in adulthood (Muller et al., 2009) the pace of urban living and loss of biodiversity may have led to a diminished experience of nature (Pyle, 2003). As the majority of participants in the two studies in chapter five lived in urban and suburban environments, their connection with nature may not have been derived from actual contact with nature but rather from the memory of positive experiences in childhood instead. Focused contact with nature was used in the research presented in chapter six as part of the combined pathway condition that increased levels of nature connectedness after spending an hour engaging with nature via the pathways. Simply having contact with nature as part of a walk in the nature control condition did not significantly increase nature connectedness although there was a significant benefit to vitality. Contact was also part of the reflective writing intervention in chapter seven that again showed a significant increase in nature connectedness, with the majority of participants from urban or suburban environments. The Content Analysis of the reflective writing contained the theme of contact, where engaging with nature through the senses was linked to nature connectedness, with contact leading to an increased sense of vitality for the participants. This supports the theoretical model produced in chapter five that having an engaged contact with nature was a pathway to nature connectedness given that those participants who spent an hour walking in nature and engaging via the pathways had significant increases in not only nature connectedness but vitality as well. The research also took place in an urban location supporting Newman and Dale's (2013) suggestion that the urban environment presents opportunities to have a positive relationship with nature through meaningful contact as doing so led to a connection with nature in chapters six and seven.

Emotion (The Humanistic Value)

An emotional bond with nature has long been associated with a positive human-nature relationship either through the humanistic value of the Biophilia Hypothesis (Kellert & Wilson, 1993) or more recently in nature connectedness research. Several measurements of nature connectedness aim to assess an affective connection with nature including the Connection with Nature scale (Mayer & Frantz, 2004); the Nature Relatedness scale (Nisbet et al., 2009); and the Love and Care for Nature scale (Perkins, 2010). An emotional attachment to, or relationship with nature is thought to be a trait like bond with nature formed through childhood that is comprised of love, freedom, security and being part of nature (Muller et al., 2009). Emotion acting as a pathway to nature

connectedness would therefore be expected, given the prominent role affection for nature is proposed to play in a positive human-nature relationship, with activities that focus on finding a similarity with nature that in turn promote positive emotions towards nature through anthropomorphism, increasing nature connection (Tam et al., 2013).

Emotion was another consistent pathway to nature connectedness within the research presented, emerging in the theme engaging with wild nature in chapter four, with affective activities acting as consistent pathways to a connectedness with nature within the regression models in chapter five, and the intervention that increased both nature connectedness and vitality when engaging with nature through the pathways in chapter six. Emotion was also a part of the pathway intervention of chapter seven where engagement with the pathways led to an increase in nature connectedness. The theme of emotion emerged from the reflective writing of the participants that spoke of forming an emotional bond with nature with affective responses involved in the nature connecting experiences of the participants; namely love, awe and happiness. This supports previous research that has suggested that possessing a personal, emotional attachment to nature is an important aspect of nature connection (Davis et al., 2009), as an individual feels as though they are a part of a wider natural community (Mayer & Frantz, 2004; Mayer et al., 2009). It had been thought that an emotional affiliation towards nature was largely the result of positive childhood experiences (Hinds & Sparks, 2008; Muller et al., 2009), which was supported by the initial pathways emerging from the focus group analysis, with participants expressing forming a connectedness through positive childhood experiences. However, the increases in nature connectedness by adult participants engaging with the pathways including emotion in chapters six and seven, suggest emotion also facilitates nature connection through experiences in adulthood as well.

Compassion (The Moralistic Value)

Compassion can be defined as the motives, emotions and individual abilities that lead to the support, understanding and helping of others (Gilbert, 2014). Humanity is but one of many species to have evolved on Earth and so is a part of nature (Wilson, 1992). It is thought our evolutionary history has created the desire to co-operate with others that is an evolved propensity shared by many mammals and is not a uniquely human quality. As a result, humanity directs large amounts of attention towards the monitoring of social, co-operative relationships in order to maintain fairness and justice that act as the basis for our

moral codes. Compassion arises through the emotional bonds, co-operation with others, and our cognitive complexities that offset our potential for destructive behaviours in favour of a compassionate mindset and motive to help others (Gilbert, 2014).

Compassionate helping has been linked to high levels of personal attachment that is not primed by positive effect (Mikulincer & Shaver, 2005). While research into compassion has centred almost exclusively on relationships between humans, the idea that compassionate helping behaviours emerge as a result of a socially and genetically shaped sense of self (Gilbert, 2014) links well to the notion of nature connectedness. The extension of the self to include wider nature is a key component in the sensation of a connectedness with nature (see Olivos et al., 2011; Schultz, 2001; Schultz et al., 2004) with compassion creating a sense of connectedness with another (Gilbert, 2014) that could include a compassionate connection with other natural entities. Compassion for others leads not only to wellbeing outcomes for the individual, as through the sense of belonging it creates also results in pro-social helping of others (Gilbert, 2014; Mikulincer & Shaver).

Compassion as a pathway to nature connectedness may work in the same manner; by developing an attachment to nature, this forms a sense of belonging to a wider social group that leads to a desire to help the other as it is included within the individual's self-identity. Often research into nature connectedness has treated pro-environmental helping of nature as an outcome of a connected relationship (Davis et al., 2011). The theme of nature conservation as a pathway to nature connectedness emerged in chapter four that described the active helping or protecting of nature as a route to the participant's own sensation of nature connectedness rather than an outcome of being connected. This was expanded further with compassionate activities consistently acting as pathways to nature connectedness in chapter five. This supports recent research that has found that helping nature was described as awakening a participant's own connectedness to nature in qualitative interviews (Lewis & Townsend, 2014). The reflective writing by participants when connecting with nature via the pathways in chapter eight contained the theme of compassion, and spoke of compassion for nature as an other that created feelings of self-worth, self-compassion and the desire to help nature for its intrinsic worth. This was at odds with another theme, that of responsibility that led to a desire to protect nature for its utilitarian value, rather than nature as a similar other with its own intrinsic worth. The reflective writing suggests compassion as a pathway to nature connectedness does lead to becoming connected with another (Gilbert, 2014), in this case nature as a part of the self

(Schultz, 2001). It further supports the notion that nature connectedness creates the perception that humanity and wider nature are bound by the same natural laws with all life having value (Nisbet & Zelenski, 2013; Schultz et al., 2004). Therefore compassion as a pathway to nature connectedness may directly counter the disconnection between humanity and nature as a result of human exemptionalism (Catton & Dunlap, 1978) and the resulting predominant anthropocentric viewpoint of separation held within westernised societies (Maller et al., 2009; Vining et al., 2008).

Beauty (The Aesthetic Value)

Humanity's preference for certain aesthetically pleasing natural environments (Kaplan, 1995) may stem from the need to dedicate a large amount of attentional resources to pick up the visual cues necessary for survival (Capaldi et al., 2014). Natural wonders consistently invoke feelings of awe, a powerful emotional response, with nature activities including hiking thought to be chosen by individuals who wanted to repeat a previous awe inspiring event (Shiota, Keltner & Mossman, 2007). Natural beauty has been described as a good thing in nature in statements written by participants after spending time in nature (Richardson et al., 2015) while interpreting nature through artistry has been linked to a recognition of nature's beauty and developing a love for nature in children (Gray & Birrell, 2015) and increasing an implicit connection to nature (Bruni et al., 2015). Beauty initially emerged as a pathway to nature connectedness in chapter four through the noting nature through artistry theme, supporting the findings of Gray and Birrell (2015) and Bruni et al., (2015) that artistic activities create a positive connection with nature.

Beauty's association with nature connectedness was further refined in chapter five, where beauty acted as a mediator for contact, meaning and compassion in study one and only for the compassion pathway in study two. Beauty was not found to be a pathway to nature connectedness in its own right, rather it was a consistent mediator of compassion on nature connectedness; further extending the previous finding that beauty moderates the relationship between nature connectedness and wellbeing (Zhang et al., 2014). Beauty was also used in the pathway activity condition in chapters six and seven, with participants told to notice the nature around them with both pathway interventions leading to significant increases in nature connectedness and vitality. Beauty emerged as a theme in the analysis of the reflective writing in chapter eight, with participants expressing awe

and appreciation of the beautiful aspects of nature that led to some participants advocating the need to protect nature. While beauty has not been found to act as a pathway to nature connectedness within the systematic investigation presented within this thesis, beauty does have an important role to play through its mediating effect on the pathways of contact, emotion, meaning, and compassion that together, were found to significantly increase nature connectedness. This supports previous findings that beauty acts as a good thing in nature when it is noticed by individuals when connecting with nature (Richardson et al., 2015) and increases in nature connectedness in children when they engage with nature through artistic activities including sculpting and photography (Bruni et al., 2015).

Meaning (The Symbolic Value)

Personal meaning derived from nature has been suggested as occurring in childhood, with the ability to derive and report meaning from experiences in nature during adulthood being greater in individuals who had grown up in a rural environment (Hinds & Sparks, 2008). It is thought symbolism is used to deepen the relationship an individual has with nature (White, 2012) that is expressed through the transpersonal experiences they have with nature (Zylstra et al., 2014). The use of symbolism is suggested to create positive schemas about nature and the self (Feral, 1998) with symbolism commonly used in most languages (Kahn, 1997). Meaning has been previously found not to be related to an environmental identity but was related to overall wellbeing, with Hinds and Sparks (2008) suggesting meaning may be a mediator between experiences in nature and wellbeing.

While the themes from the focus groups of chapter four did not contain an aspect of meaning despite there being a question included in the schedule on symbolism, meaning making activities did emerge as a pathway to nature connectedness in chapter five's first study but dropped from the model in the replication. Meaning was not a consistent, significant pathway to nature connectedness which was unexpected given the suggestion that symbolism is an important part of the human-nature relationship being one of the nine values of the Biophilia Hypothesis (Kahn, 1997). While it did not emerge as a consistent pathway within the theoretical model, meaning was used within the subsequent two applied intervention studies in chapters six and seven. Meaning was used as a reflective activity in both chapters, with both finding significant increases in nature connectedness and vitality. Meaning emerged as a theme from the analysis of the

reflective writing in chapter eight, with participants experiencing a connection with nature through meaning making. This supports the results of study two where meaning emerged as a significant predictor within the theoretical model, suggesting that meaning making is a pathway to nature connectedness. This supports the assertion that finding meaning through symbolism enhances the nature connecting experience through the expansion of an individual's awareness (White, 2012) that in turn allows for an expression of the transpersonal experiences in a more than human world that connecting with nature is thought to provide (Zylstra et al., 2014). While meaning for some did lead to nature connecting experiences in chapter eight, some participants were not able to either find meaning or use meaning to connect with nature, a finding which warrants further enquiry.

The Benefit of Connecting with Nature

Aim five of the thesis focussed on investigating the effectiveness of the pathways in not only increasing nature connectedness, but investigating the outcomes that result from this connection. The benefit to mental wellbeing arising from a connection with nature has been well established, being just as important as income or education (Capaldi et al., 2014). Nature connectedness is positively related to a number of facets of mental wellbeing including satisfaction with life (Mayer & Frantz, 2004; Russell et al., 2013), happiness (Zelenski & Nisbet, 2012), perspective, and social and psychological wellbeing (Howell et al., 2011). Of all the wellbeing outcomes however, vitality has shown the strongest relationship with nature connectedness (Capaldi et al.). This finding was further supported by the research presented in chapters six and seven, as engaging with nature via the pathways not only led to increases in nature connectedness but vitality as well. The pathway of contact was further highlighted for its link to vitality in the analysis presented in chapter eight. The identified pathways not only have implications for mental wellbeing however, given that a connection with nature (that the pathways increased) has been shown to predict future engagement with nature (Nisbet et al., 2011). Benefits to physical health have been found to arise from engaging with nature (Russell et al., 2013) with nature connectedness suggested to offer coping options that reduce stress and in turn, provide resilience towards disease or illness (Cervinka et al., 2011). The effect of contact with nature leading to greater immune functioning is suggested to act as a pathway to further health benefits (Kuo, 2015); making the identified pathways to nature connectedness important for mental and physical wellbeing.

Despite there being an increased interest in nature connectedness by researchers as a result of the potential implications it may have on pro-environmentalism (Tam, 2013), chapter two suggested that there is no direct causal effect of nature connectedness on the enactment of pro-environmental behaviour. However, pro-environmental attitudes (Mayer & Frantz, 2004), biocentric values (Bruni & Schultz, 2010; Schultz et al., 2004), empathy and environmental concern (Berenguer, 2007; Tam, 2012) have all been found to relate to nature connectedness; with these factors in turn influencing pro-environmentalism. Support for this comes from the experimental intervention in chapter seven where engaging with the pathways led to significant increases in pro-environmental attitudes that were not found within the nature control condition. While attitudes are but one of the many variables involved in facilitating pro-environmental behaviour, nature connectedness, as facilitated by the pathways, may be a factor in accepting policy measures enacted to protect the environment, with such factors in need of investigation (Hayes & Berman, 2015). One pathway in particular that may lead to acceptance and commitment to enacting pro-environmental behaviours is compassion. A connection with nature has often been thought to lead to pro-environmental outcomes, yet compassionate nature activities acted as pathways to nature connectedness instead. Given that compassion can result in pro-social helping (Gilbert, 2014; Mikulincer & Shaver, 2005), this pathway may be the most important for pro-environmentalism as compassion creates a desire to understand (empathy) and co-operate with others (Gilbert, 2014); as shown in the theme of compassion in chapter eight. Investigating the effect of the pathways on nature connectedness and in turn, commitment to sacrifice and acceptance of policy to protect wider nature is an important avenue for future research.

Application of the Identified Pathways to Nature Connectedness

Catalyst for a Cultural Shift in Western Societies

The prevailing cultural view in westernised societies is that humanity is separate from (Vining, 2003) and even above nature (Maller et al., 2009), a view influenced by Descartien philosophy, reductionist science (Merchant, 2006) and advances in technology (Kahn & Hasbach, 2012). The cultural notion of human exceptionalism (Catton & Dunlap, 1978) separates humanity from nature through the development of an anthropocentric viewpoint that is thought to be responsible for the continuing enactment of environmentally harmful behaviours (Scofield & Margulis, 2012). Addressing the

cultural disconnect between humanity and the rest of nature is important for the development of an ethos that will help protect nature (Bordeau, 2004; Lamb, 1996) with humanity becoming connected to nature and perceiving themselves as belonging to a wider natural community (Mayer et al., 2009). Western capitalist societies are thought to focus predominantly on wanting material possessions and self-focussed competition with others, at the expense of living co-operatively with or affiliating with others (Gilbert, 2014).

The cultural shift that a widespread connection with nature would bring would not only potentially contribute to pro-environmental attitudes and behaviours but contribute to the wellbeing of humanity and further engagement with nature through the cultural notion that nature is good for wellbeing (Hartig et al., 2011). In order to encourage a positive relationship between humanity and nature through a connectedness to nature and the cultural shift this would create, an engagement with nature through activities that encourage a connectedness with nature are required. The pathways of contact, emotion, meaning, compassion, and beauty have been systematically found to encourage a connectedness to nature. These pathways ought to be used directly within a wide range of contexts to encourage nature connectedness and could be applied within the areas presented below.

Charities and Non-Governmental Organisations

Large nature charities including the Royal Society for the Protection of Birds (RSPB) and the World Wildlife Fund (WWF) have often used knowledge and identification when engaging the general public and their members. The Common Cause for Nature Report (PIRC, 2013) represents a shift by the RSPB, WWF and other charities in their approach to engaging the public by focussing less on guilt messages and monetary donations in favour of alternate values and frames. The identified pathways of contact, emotion, meaning, compassion, and beauty could be utilised as frames when engaging individuals with nature by large and small charities alike in the activities and literature they use. It is envisaged this would lead to increases in nature connectedness and lead to the subsequent formation of pro-environmental attitudes and potentially pro-environmental behaviours in the form of practical conservation efforts or monetary donations. On top of this, organisations including the RSPB, National Trust, Woodland Trust, the Wildlife Trusts and the National Forest rely on generating income through

visitors that contribute to the preservation and protection of natural environments and the biodiversity they contain. The wellbeing benefits that nature connectedness could bring through an engagement with the pathways could encourage repeat visitation through the pleasurable experiences and sensations engaging and connecting with nature creates. Positive experiences within nature are not only important for large charities but also local councils and outdoor groups such as the scouting movement and girl guides. With the diminishing time spent outdoors by children and young people (Louv, 2005), creating positive nature experiences by engaging with nature through the pathways would facilitate nature connectedness and lead to increases in wellbeing (Capaldi et al., 2014) and further time spent in nature (Nisbet & Zelenski, 2013; Nisbet et al., 2009).

Parkland within the urban environment offers the opportunity to engage with nature and while extensively managed, are easily accessible greenspaces within an otherwise built environment. Again the pathways could be used as frames for events held within urban parks and the literature used in signage or guides for visitors in order to encourage a connection not only to the local place in the form of place attachment (Scannell & Gifford, 2010a) but a connection to wider nature as well. Contact, emotion, meaning, compassion, and beauty as pathways to nature connectedness could also be utilised as frames in the provision of green care and other activities that include nature as part of a therapeutic programme. The use of biotic and abiotic natural elements to promote wellbeing (Haubenhofner, Elings, Hassink & Hines, 2010) could be achieved by engaging individuals with nature via the five pathways that would increase the sensation of nature connectedness and in turn lead to positive wellbeing outcomes given that nature connectedness is strongly linked to both eudemonic and hegemonic wellbeing (Capaldi et al., 2014).

Eco-Tourism

There has been a rise in the number of people going on eco-holidays where holiday makers visit natural areas for the beauty of the flora and fauna that they contain in a sustainable way, that contributes to the conservation of the environment (Steinfeldt, 2013). Within the United Kingdom organisations such as Forest Holidays provide cabins set within areas of woodland managed by the Forestry Commission with the revenue generated by the holiday makers funding the continuing management of the woodland directly in addition to funding provided by the government. Well-managed eco-tourism

contributes to the preservation and protection of natural spaces and biodiversity through the money it generates that is entirely dependent on visitation. Given that time spent in nature is positively related to a connection with nature (Nisbet et al., 2009), encouraging nature connection through the identified pathways could lead to increases in the number of visitors to eco-tourism sites. The application of the pathways does not end with merely increasing the numbers of eco-tourists to fund conservation however, as the engagement with nature while visiting natural spaces could make use of the pathways as frames in order to increase connectedness to nature. Forming an attachment to a natural space while on holiday would lead to repeat visitation and further funds to conserve nature through place attachment (Scannell & Gifford, 2010a) and the wellbeing benefits connecting to nature provides (Russell et al., 2013). There would also be the potential to form emotional attachments with nature through the positive experiences that engaging with nature via the pathways could bring that would be important for nature connectedness in children (Muller et al., 2009) and adults (Mayer & Frantz, 2004) alike. Such experiences with nature may not occur in an urban home environment if meaningful interactions with nature are not possible (Pyle, 2003), making the application of the pathways as part of eco-tourism an ideal opportunity to form a connection to nature.

Another area of tourism that could also benefit would be nature attractions including zoos and safari parks that aim to provide contact with exotic natural species while conserving those species that are deemed at risk. Zoos have been the focus of previous research into nature connectedness, with visitation to zoos linked to the creation of an environmental identity (Clayton, 2012) and increases in implicit connection to nature (Bruni & Schultz, 2010; Schultz & Tabanico, 2007). Engaging with animals, even those in captivity could be another area of tourism where the pathways of contact, emotion, meaning, compassion and beauty could be applied. Given that contact with the animals is inherent in the visit yet limited to some degree through the physical separation provided by cages and enclosures, the pathways of emotion, meaning, compassion and beauty would be most relevant. The use of these pathways in the information provided through signs or talks could work in tandem with the awe that could be inspired by the beauty of many animals found within zoos or safari parks to encourage a connection with the animals encountered. Not only would such encounters lead to wellbeing benefits for the individual but also encourage the awakening of a personal environmental ethic (Lewis & Townsend, 2014) that is important for pro-environmental action (Wilson, 2002).

Education

The pathways emerged from a body of research that sampled exclusively adult participants and so any generalisations beyond an adult population are limited, with childhood exposure covered within the focus groups of chapter four. While there is a need to investigate the pathways presented within this thesis specifically with children and young people before any strong assertions can be made about their effectiveness, the potential use of the pathways within educational contexts are discussed below.

It is thought that childhood plays a crucial role in the development of an emotional affiliation with nature that predicts engagement with the natural world in adulthood (Muller et al., 2009). Unfortunately, environmental education in schools is often done through traditional classroom learning where the shallowness of the learning process compromises a meaningful interaction with nature (Pyle, 2003). In an addendum to chapter five, childhood experiences in nature were investigated which found that spending time in educational contexts with a teacher or other significant adult was negatively related to nature connectedness (Lumber, 2014). The pathways have the potential to create meaningful interactions with nature that immerse the individual within the complexity of nature and remove the notion of the separation of humanity and nature that education often implies (Antal & Drews, 2014), by forming a connected relationship through the pathways. The pathways as frames for engaging with nature would work to facilitate experiential learning as a core part of developing a connectedness to nature (Mace et al., 2012; Simiaka & Samways, 2010; Zelenski & Nisbet, 2012). This could be achieved through the creation of new concepts and incorporation into the pre-existing ideas held by the individual through interacting with the wider environment (Kolb & Kolb, 2005). The experiential learning cycle of abstract hypotheses, active testing, concrete experiences and reflective observation could be readily applied to the facilitation of nature connectedness in children through the identified pathways. There would be a need to move beyond the traditional classroom context by having direct contact with nature, whether this is through field trips or within local spaces such as school fields, parkland or even in urban streets given that the urban environment contains its own biodiversity and so offers the opportunity to have direct experiences with nature (Newman & Dale, 2013).

An alternative method of educating children and young people are forest schools that are in demand in children's education within the United Kingdom (Birmingham FEI Cluster Group, 2006). Forest schooling involves positive experiential learning within woodland where nature is engaged with and achievable problems are solved individually or co-operatively with others (Forest Schools Education, 2014). The pathways would be ideal frames for the activities conducted within forest school sessions that could focus on contact, forming an emotional bond, finding meaning and compassion for nature, and noticing beauty in order to encourage a connected relationship to form. But the pathways are not restricted to education programmes that teach and engage children. Given that students in undergraduate and postgraduate study are more likely to be the policy makers of the future, there is a need to encourage a connection with nature given its links to wellbeing and pro-environmentalism. The importance of engaging higher education students with nature in an effort to encourage a positive relationship with nature to form has been done before (see Mace et al., 2012). The pathways could be utilised within practical components to modules on courses ranging from psychology and the social sciences, the natural sciences, education, health and social care through to engineering and business studies. Learning within natural spaces could be encouraged and linked into the scheme of work framed through the pathways to find solutions to real world issues where experiential learning would be essential. The benefit to the student and their development through a first-hand experience of nature would be good not only for the individual but to the wider ecosystem to which they belong.

Museums

The extinction of experiences as a direct result of urban living (Pyle, 2003) has led to numerous efforts to create virtual natural environments as a way of creating meaningful interactions with nature and subsequent connectedness with it, when actual contact with nature is not possible (McDonald et al., 2015). While many attempts have focussed on virtual reality, imagination and video recordings (see Barhold et al., 2014; Mayer et al., 2009; McDonald et al.), natural history exhibits in museums have also been used to increase nature connectedness (Arbuthnott et al., 2014) when contact with actual nature is not possible. Arbuthnott et al.'s (2014) use of a museum gallery to encourage a connection with nature failed to find any increase in nature connectedness that may have been due to the presentation of nature through a video, often found to not be as effective at facilitating a connection to nature as actual nature (Mayer et al., 2009). The pathways

of contact, emotion, meaning, compassion, and beauty could be readily applied within a museum setting and encourage meaningful experiences with nature within an urban environment (Newman & Dale, 2013). An opportunity arose for the author to be involved in an evaluation of the impact of the new nature gallery at Derby Museum on visitor's wellbeing, active noticing of, engagement with, and connectedness to nature where the pathways were included as engagement activities suggested by the museum for the visitors.

Case Study: Derby Museum

The Notice Nature Feel Joy gallery at Derby Museum was created in a co-design process with museum staff and visitors during the complete refurbishment of the nature gallery. As a result, the emphasis is on the exhibits within the gallery space with minimalist clear Perspex cases and a limited initial amount of information provided (with more available in booklets around the gallery) in order to not distract attention away from the exhibits. The aim of the gallery is to allow visitors to engage with the gallery space in their own way with no prescriptive course to follow in order to view the exhibits, with a focus on a playful interaction rather than a provision of the facts. The gallery space is geared toward encouraging the noticing of nature outside of the museum within the local environment wherever nature is present and so represents a place to offer meaningful opportunities to engage with nature within an urban environment. An app delivered via a mobile tablet device was developed in order to evaluate any impact the gallery had on engagement with nature and nature connectedness as a result of visiting the gallery. The app measures a visitor's noticing and connectedness to nature, their pro-environmental attitudes and their satisfaction with life along with the visitor's inclination towards engaging with nature around six broad areas; identification of species; finding meaning; helping nature; learning about history; observing nature's beauty; being creative. Visitors use the app to give their responses before and after visiting the gallery and as part of a two month follow-up. The inclinations were specifically chosen to not only reflect some of the potential pathways to nature connectedness but to also allow the gallery/app to suggest potential activities the visitor could engage with after visiting the museum. This was done through the suggestion of 'connect cards' developed by the museum and the author that were mapped onto the visitor's inclinations in order to encourage an engagement with nature and nature connectedness, with the cards, activities and the pathway they relate to presented in table 9.2.

Table 9.2 The Connect Cards and Activities from the Notice Nature App

Connect Card	Activities
Take Notice of Nature (Beauty)	<p>Watch a spider spin it's web</p> <p>Notice tiny plants and flowers growing near your door</p> <p>Sit outdoors and just listen</p> <p>Collect different types of leaves and draw their shapes and textures</p> <p>Lie down to watch the sky change</p> <p>Spot some firsts! First snow drop to emerge, first leaf to fall, first chick to hatch</p> <p>Be curious</p>
Be Active (Contact)	<p>Walk home though a park</p> <p>Walk amongst trees at an unusual time to appreciate different types of wildlife. Stay quiet and be surprised!</p> <p>Get up early in spring or summer and step outside to hear the dawn chorus</p> <p>Grow something that you can eat</p> <p>Go on a local bat walk at night</p> <p>Make bark rubbings</p> <p>Run barefoot on grass</p>
Keep Learning	<p>Identify the species of tree in your area, find out if any of them are protected</p> <p>See how many different bugs you can see in a small area of grassland and find out more about them</p> <p>Visit places of natural historical significance e.g. woods, hills or stately homes with gardens</p> <p>Learn how your ancestors lived and used nature in the past</p> <p>Be an animal detective by spotting animal tracks, find out who made them</p>
Connect with People through Nature (Emotion)	<p>Join your local park 'friends' group</p> <p>Make a natural sculpture using the materials you find around you in the garden, woods, seaside. Take a photo of it and share with others.</p>

	Invite friends or family to take a walk with you through your favourite green area and talk about the nature you notice.
	Have a picnic in a local park with others. Include food you have grown
	Kick Autumn leaves together
	Collect conkers and pine cones with others and fill a bowl with what you've collected
Give Back to Nature	Put seeds out for the birds
(Compassion)	Leave an area in your garden wild and untended
	Stop using weed killers in your garden – mulch with compost or cover with old carpet or cardboard instead
	Plant a window box or grow your own mini habitat to attract new life
	Put up a bird box
	Grow as many bee friendly plants as possible
	Make an ethical food choice by buying items such as sustainably sourced fish or free range eggs

The objective of the Notice Nature Feel Joy gallery was to engage visitors with nature within the local environment as a result of engaging with the gallery space. This meets the need to engage individuals within urban environments with nature to produce meaningful experiences (Newman & Dale, 2013). This approach led to the museum winning the national award for participatory practice for the Notice Nature gallery which was described as having an experimental and inclusive approach (Collections Trust 2015). It was important to incorporate the pathways of contact, emotion, compassion, and beauty within the Connect Cards given to visitors as the gallery space and project as a whole offered an excellent opportunity to apply the pathways and to encourage the sensation of nature connectedness within the general population. Unfortunately, the pathway of meaning was not represented within the connect cards due to the museum not including it; something which, it is hoped, can be addressed in further applied work with the pathways. The evaluation of the gallery's impact on engagement with, and connectedness to nature is set to run for a year beginning in December 2015 and will offer perhaps yet more evidence for the effectiveness of the pathways in encouraging nature connectedness.

Methodological Strengths and Limitations

It is acknowledged that for two of the five research studies presented in this thesis, the number of participants was not ideal. The focus groups that were conducted in chapter four were originally meant to have between six to ten participants per group in order to allow for a sufficient saturation of data to occur. Despite purposive oversampling to avoid small groups, there were a number of individuals that did not attend the focus group sessions. If the results were taken in isolation, it could be suggested that the study did not cover all of the potential pathways to nature connectedness. As there was the possibility that sufficient saturation of the data did not occur, the research in chapter four represented an initial enquiry of the potential pathways to nature connectedness. A number of the initial pathways did emerge however as significant pathways in the model presented in chapter five (see table 9.1) which in turn led to a significant increase in nature connectedness in chapters six and seven. These findings, along with the framework of the Biophilia Hypothesis (that covers the whole spectrum of humanity's relationship with nature) used a framework for the investigation, lowers the possibility that other pathways were missed.

While there were sufficient sample sizes used in chapters five, six and seven based on power calculations conducted prior to each study, the low follow-up response rate in chapter six placed limitations upon the research presented in this chapter. The initial sample size of 72 participants exceeded that which was suggested by the power calculation of 69 participants. It was at the follow-up stage of the study were a low completion rate by participants occurred which limited the generalisability of the findings as it is uncertain whether a prolonged effect of the pathways on nature connectedness would have been found in the follow-up data. Gathering data on the long term effect of engaging with nature via the pathways would be an ideal topic of enquiry for future research.

The theoretical model that was presented in chapter five used a measure of engagement with nature that was structured around the nine values of the Biophilia Hypothesis. It was important that the activity measures created could potentially be enacted on a regular basis while being accessible to a general population; necessitating the activity items to be generalised rather than highly specific. While the activity items used within study one were internally validated by eight individuals with some knowledge of

biophilia, the resulting analysis indicated the utilitarian and dominionistic subscales had an alpha lower than .5. While items were removed where possible in an attempt to increase the validity, it is acknowledged that the subscales were not ideal. However given that the regression model accounted for 60% of the variance of nature connectedness and the identified pathways from the model led to significant increases in nature connectedness when used in two applied interventions, it is unlikely that pathways were missed due to reliability values of below .5 used within the research. Alongside this, the notion that activities which exploit or dominate nature are incompatible with the intrinsic valuing of all life which a connection with nature implies (Schultz, et al., 2004), supports the finding that activities that use or control nature were not pathways to nature connectedness. This theoretical argument, coupled with the significant increase in nature connectedness found when applying the pathways experimentally, supports contact, emotion, meaning, compassion, and beauty as pathways to nature connectedness; while simultaneously discounting the possibility that the low Cronbach's for the utilitarian and dominionistic, subscales led to potential pathways similar to the dominionistic and utilitarian values being missed. While the Biophilia Hypothesis was utilised effectively as a framework for investigating the potential pathways, its use did potentially restrict the pathways identified to somewhat be in line with the biophilic values. This does not detract from contact, emotion, meaning, compassion, and beauty being accepted as pathways to nature connectedness, rather it offers the possibility that other pathways in addition to those identified may also exist. As well as other potential pathways existing, it is acknowledged that an inclusion of measures about childhood or more recent experiences with nature should have been taken so that the relationship between past experiences and the identified pathways could be explored further. The critique of sampling student only populations is often levelled at psychological research, with students included within the sampling used for this thesis it is important to note that a mixed sample was used in all but one study, with the identified pathways consistently found within the five research studies.

The research presented within this thesis represents the first systematic investigation into the pathways to nature connectedness, meeting the call for an investigation into the actions and practices that lead to a connected relationship to nature (Zylstra et al., 2014). The consistent replication of contact, emotion, meaning, compassion, and beauty as pathways to nature connectedness has built an evidence base

in support of the identified pathways. The systematic investigation has benefitted not only from using a wide range of methodologies including qualitative methods, surveys and experimental testing of the pathways to nature connectedness, but the latter of which met the call of Clayton (2012) for more applied research into nature connectedness to be conducted. The research presented within this thesis drew upon the suggestions of Bateson (2002) of the need to perform scientific investigations through a holistic methodology that avoids a simple explanation and the placing of humanity as dominant over nature. Employing a traditional reductionist approach would not have been compatible with a thesis investigating the possible counter to the separation of humanity and nature that the reductionist method has contributed to. Instead, by conducting a body of research that has utilised qualitative and quantitative methods that have focussed on the whole rather than the minute mechanisms involved in connecting with nature, a holistic approach (Mittelstrass, 2014) has successfully identified contact, emotion, meaning, compassion, and beauty as pathways to nature connectedness; without succumbing to the potential pitfalls of the reductionist method that falsely separates humanity and nature.

Future Research

While the systematic investigation presented within this thesis has provided a theoretical account and empirical testing of the pathways to nature connectedness, the results obtained do not preclude further research into the topic area. In chapter five, the proposed interplay between the identified pathways was discussed in regards to the overlap and links the pathways share. Given that the pathways increase nature connectedness and in turn benefit wellbeing and pro-environmental attitudes, there is a need to identify and test what specific activities the pathways can be incorporated into given that at present, contact, emotion, meaning, compassion, and beauty are overarching terms. While operational definitions were used in the qualitative analysis in chapter eight, it would be useful to identify the activities that meet these operational definitions and to investigate the interplay between them while testing their effectiveness in increasing nature connectedness through further research.

The body of research presented within this thesis exclusively sampled adult populations, both student and the general populous. Given the importance of childhood experiences for connecting with nature and engagement with nature in adulthood (Hinds & Sparks, 2008; Muller et al., 2009), investigating the effectiveness of facilitating a

connection with nature via the pathways in children would be an important avenue for further study. This could take the form of the pathways as frames for activities used by public bodies and charities when engaging children with nature or as activities to connect children through environmental education as an alternative to the often used focus on knowledge and identification. The work of charities, education establishments and other public organisations are not limited solely to children. There is a need to engage all sections of society with nature in order to form a connectedness with nature if the much needed wellbeing and pro-environmental benefits are to be achieved. Large scale applied interventions would make an ideal applied area for further research that could take place through charities, public bodies, non-governmental organisations and higher education establishments. Research on a large scale would provide further support for the effectiveness of the pathways but more importantly, could achieve the cultural shift towards a reconnection with nature that is needed to counter the harmful perceived separation which westernised societies currently experience.

Conclusion

The prevailing cultural perception within westernised societies (Merchant, 2006) that humanity is unique and therefore separate from nature (Catton & Dunlap, 1978) emerged from the reductionist scientific method (Bordeau, 2004), monotheistic religiosity (Scofield & Margulis, 2012), and hierarchical valuing of gender and nature (Plumwood, 1993), which advocated the use and exploitation of nature for humanity's (man's) benefit (Antal & Drews, 2014). While the existence of culture and humanity's technological advancement have contributed to a disconnection with nature, the perceived separation is nonsensical, given that humanity can never truly be separate from nature (Kahn & Hasbach, 2012). Even though humanity's disconnection is perceptually based, the perceived separation has contributed to anthropogenic harm to the environment and a widespread loss of other species (Frantz et al., 2005). The loss of wider nature not only has an effect on the species and environments being harmed but affects humanity as well; through the loss of our own heritage and the threat to our own existence this creates (Wilson 2002). Not only is there a physical threat to our survival but the negative effects to human wellbeing due to the loss of nature are not yet known (Maller et al., 2009). While biocentrism has been seen as a potential counter to the disconnection between humanity and wider nature, the biocentric ethos that nature ought to be free from human influence (Lamb, 1996) would only perpetuate the harm it seeks to address. Research

attention has since turned to connecting individuals with nature (Tam, 2013) given its importance for wellbeing (Capaldi et al., 2014; Russell et al., 2013) and pro-environmentalism (Nisbet & Zelenski, 2013). While the benefits of a connection with nature have been frequently investigated, the routes to connection were less well known, leading to calls for a systematic investigation into the routes to nature connectedness (Zylstra et al., 2014) and more applied, rather than descriptive research to be undertaken (Clayton, 2012).

This thesis has presented the first systematic investigation of the pathways to nature connectedness that has utilised a holistic approach (Mittelstrass, 2014), avoiding the problems surrounding a reductionist methodology of a minute enquiry that misses the whole; further separating humanity from the wider natural processes to which we belong (Bateson, 2002). The programme of research undertaken for this thesis has met the call for a systematic investigation to be carried out by Zylstra et al., (2014) as the pathways of contact, emotion, meaning, compassion, and beauty have been identified through five studies that together represent the first systematic investigation ever conducted into the routes to nature connectedness. While the research initially created a theoretical model of the pathways to nature connection, the pathways have been tested in two intervention studies, confirming that engaging with nature through contact, emotion, meaning, compassion, and beauty increases a connection with nature; meeting the need for more applied research as advocated for by Clayton (2012). Engaging with nature via the identified pathways has been found to counter the disconnection between humanity and nature through nature connectedness while increasing wellbeing and pro-environmental attitudes. The increase in nature connectedness through the pathway interventions has occurred within an urban environment, itself thought to be a barrier to meaningful experiences within nature (Pyle, 2003). The programme of research supports the notion that the urban environment can still offer opportunities to connect with nature (Newman & Dale, 2013), as the pathways facilitated nature connectedness within local, urban spaces (Arbuthnott et al., 2014). Given that around 50% of humanity now reside in urban spaces (Lin et al., 2014), this is especially needed as the activities traditionally thought to reconnect individuals with nature, including camping in wilderness environments, are impractical for those living within urban locations (Arbuthnott et al.).

The pathways of contact, emotion, meaning, compassion, and beauty offer the first viable, systematically identified routes to reconnecting humanity with nature, which has

the potential to counter the harmful disconnection from nature that is prevalent within westernised societies. The identified pathways have been verified through two intervention studies that have shown their effectiveness in not only nature connectedness but wellbeing also. Contact, emotion, meaning, compassion, and beauty should be used by charities, public bodies, education establishments, and visitor attractions when engaging individuals with nature within western societies. Doing so will help counter the harm currently being caused to nature so that important parts of humanity's culture, identity, and genetic heritage are not lost. This will help humanity move from its current evolutionary cul-de-sac (Bateson, 2002) and flourish instead; something that can only be good for all of nature, humanity included.

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Appendices

Appendix 4.1 Ethics Approval for Study One

Approval Letter: Psychology Research Ethics Committee

University of Derby

Date: 17.05.2013

Dr Frances A. Maratos

Chair, Psychology Research Ethics Committee, University of Derby

Dear Ryan,

Ethics Ref No: 080-13-RL

Thank you for submitting this revised application to the Psychology Research Ethics Committee.

I have now reviewed the revised documents you sent following the feedback you received on your initial application, and I am satisfied that all of the issues raised have been dealt with. The application can now therefore be approved.

The following documents have now been re-reviewed:

1. Ethics application form
2. Focus Group Schedule
3. Inclusion of Nature in Self Original Citation
4. Debrief
5. Consent
6. Amphibian classification, Farm Crops, Landscape Paintings, Nature Based Sayings, Nature Charity Logos, Zoo Pictures.

If any changes to the study described in the application or supporting documentation is necessary, you must notify the committee and may be required to make a resubmission of the application.

Good luck with the study.

Yours sincerely

F. A. Maratos

Dr Frances Maratos

Appendix 4.2 Focus Group One Schedule

1. Explore how the nine values of the Biophilia hypothesis relate to nature connectedness.
2. To investigate the factors involved in developing a connectedness to nature.

Value	Definition	F.G. Term	Key Words
Utilitarian	Practical and material exploitation of nature	Use of nature	Physical sustenance, security
Dominionistic	Mastery, physical control, dominance of nature	Technical control of nature	Mechanical skills, physical prowess, ability to subdue
Negativistic	Fear, aversion, alienation from nature	Aversion to nature	Security, protection, safety

Begin by ensuring the Connectedness to Nature Scale has been completed (if not, administer the scale) followed by introductions by the group members, giving their name and if they were an animal, what would they be.

Q. What do you think NC is? Create a ‘mind map’ that all the members can contribute to.

Present the image of farm crops and ask the participants to speak about their initial thoughts/feelings.

IMAGE REMOVED DUE TO COPYRIGHT

Q. How can nature connectedness be developed by using nature?

Prompts:

Beliefs/Attitude:

Where would humanity be without nature; Food, Clothing, Shelter, medicine

Social Factors:

Friends, Family, Work, hobbies/interests, opportunities

Affect:

Pleasure/joy/satisfaction from, fields, farm animals, cooking with fresh produce

Present the image of a dam and ask the participants to speak about their initial thoughts/feelings.

IMAGE REMOVED DUE TO COPYRIGHT

Q. How can nature connectedness be developed by controlling nature through technology?

Prompt Questions:

Beliefs/Attitude:

Developments on green space, zoos, renewable energy, re-shaping, alteration

Social Factors:

Goals, sense of achievement, feeling in control, sense of order, safety

Affect:

Satisfaction, guilt, Joy, Humility, pleasure

Present the images of adverse weather conditions and ask the participants to speak about their initial thoughts/feelings.

IMAGES REMOVED DUE TO COPYRIGHT

Q. How can nature connectedness be developed when nature experiences are not positive?

Beliefs/Attitude:

Unpleasant situations, avoid nature, appreciate other nature, reject, greater respect

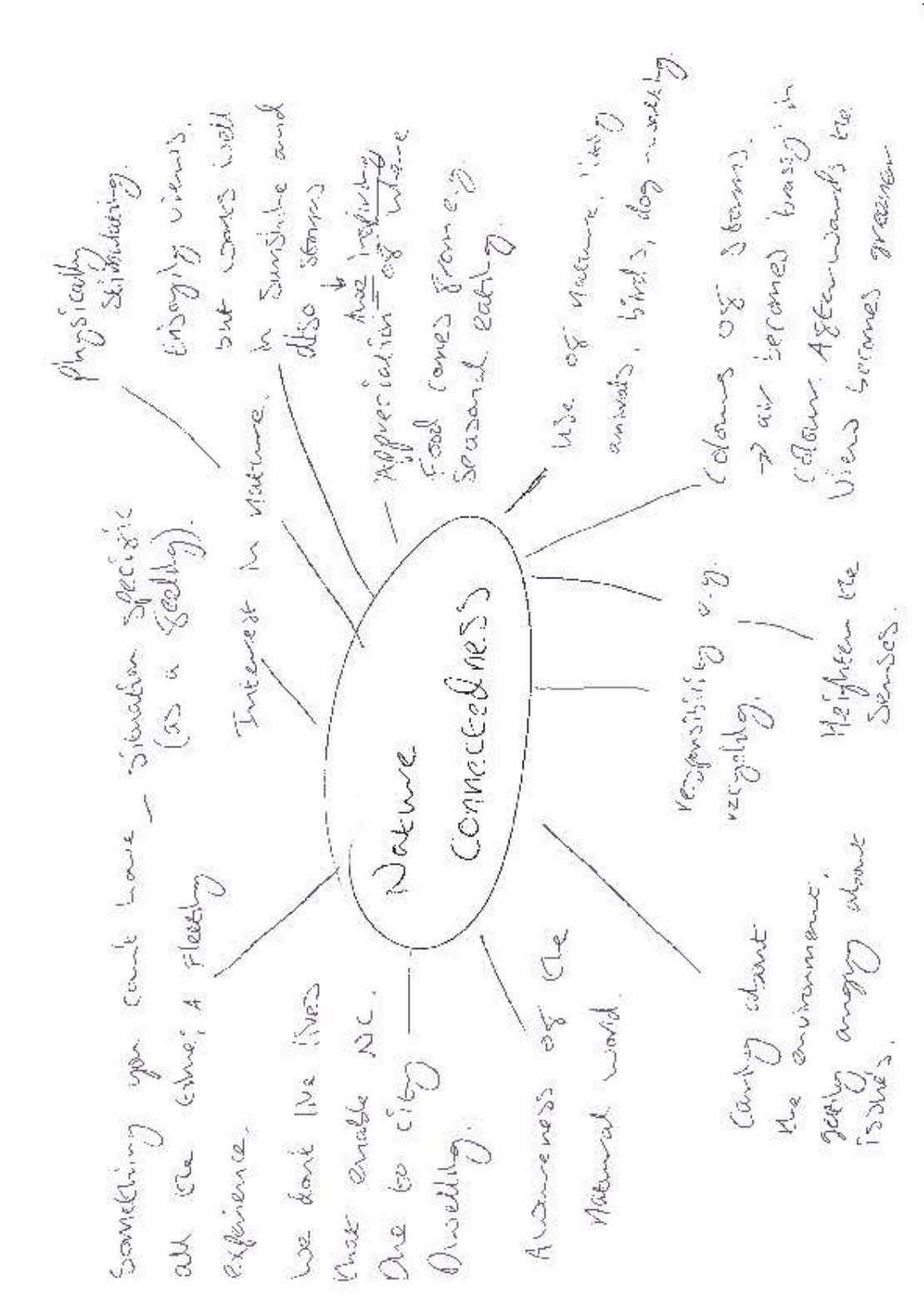
Social Factors:

Social learning; family, friends, acceptable in only some situations, NC lost?

Affect:

Aversion, Focus on Positive, Bad Weather, Stress, Relief

Appendix 4.3 Focus Group One Mind Map



Appendix 4.4 Focus Group One Transcript

Facilitator: So let's start off with some introductions, so what I'd like if you could go round the room and just kind of introduce yourself, say who you are and also say if you were an animal as we are looking at nature connectedness, what you would be and why.

Mickey: err yeah, my name is Mickey and errrm and animal? Errm a bear!

Facilitator: why a bear?

Mickey: I dunno, just 'cos they're awesome they can just, yeah they can do so much I just like the fact they have a big presence and I have a beard so I look like a bear (laughs)

Facilitator: Awesome thank you Mickey, Rubin?

Rubin: I'm Rubin and I think I'd probably be one of the apes, maybe a chimp. I don't know, we're the closest in sort of intelligence level as we kind of conceptualise intelligence to humans I suppose so yeah that's probably the thing I value the most.

Calico: Ok I'm Calico I would say probably be a Siberian tiger because they're top of the food chain in their environment, very well adapted and quite valuable in poaching and things...

Facilitator: Cool thank you

Colin: I'm Colin and I think I'd like to be a domestic cat because you get the (short pause) food provided, the living conditions and you do whatever the heck you like

Mickey: Good shout (general laughter)

Facilitator: Sounds good, Stersvevier?

Stersvevier: I'm Stersvevier and I'd probably be a Galapagos Tortoise (pause) so I'd live a long time and be very slow

Facilitator: Awesome (laughs)

Mickey: Some interesting choices there

Facilitator: Yeah no it's all good, all good, so you all kind of know each other roughly now, in just a little way, but what I'd like to do erm, you've all filled in the scale on nature connectedness so this is what psychologists kind of look at erm nature connectedness and what it actually is so what I'm interested in, actually what you guys think it is. Erm so I've got a little mind map as it were so I'd love to hear what your kind a suggestions are if someone says what is nature connectedness to you, what would you see it as?

Colin: Oh sorry (interruption)

Mickey: No go on

Colin: I just assume it's living with nature, looking after nature trying to be part of it

Mickey: I think as well it's how it impacts on you as a person in terms of if it's sunny and is the leaves are there's birds are singing there's the tree's look nice, how does that make you feel? Make you feel happy or does it have any impact on you at all I suppose.

Calico: I think it's got to be a balance between your respect for the environment as obviously your in it and can't avoid it, erm, 'cos obviously you know, you get earthquakes and stuff, nature ultimately rules us. We have to have rules, more of a balance of how we use it ourselves because obviously we don't at the moment.

Facilitator: Anybody else?

Mickey: I think if you watch Avatar (laughs) that's an extreme level of, kind of their connectedness to nature and how everything goes through this tree of souls or whatever
erm

Calico: But that could be said for us

Mickey: I know yeah but

Calico: because if we have no crops we're all going to die (talking over one another

Mickey: but to that extreme level) but we just don't

Mickey: yeah

Rubin: I find the terms quite erm ambiguous sometimes and I do wonder whether I'm just making it difficult for the sake of it being difficult because we all have this shared understanding of what nature is and as soon as you kind of say being connected to nature, you kind of understand it as being green things and wildlife and tree's and, but the fact that we kind of divide natural things and man made things and separate them and say that these are natural and these are man made...I think it's quite arrogant for us to go well actually things that are made by man we are not going to include them in the division of nature because we are all part of nature as it is and to think that the things that we have created aren't part of the erm that category of nature, kind of, it makes me go well actually well all the stuff that we've created, all the buildings and we have this shared understanding of we look at a building and go that's man made and those tree's over there, that's nature. But the fact that we are a part of nature as well and we've gone on to build those buildings, how, where do you divide that line? You don't look at a dam and go

beaver's made, that's beaver made, that's not part of nature (*noises of agreement*) so we, it seems a bit...

Stersvevier: so in other words we all have a different interpretation of what nature is

Rubin: yeah so

Colin: But the dividing line couldn't that be put as anything that has an adverse affect upon nature is not nature.

Stersvevier: No because nature can turn upon itself can't it?

Rubin: and who makes the judgement as to whether that was adverse or not? Or (*hmmm in agreement*)

Stersvevier: Yes it's like fire in the Australian bush, you can look at it and say it's adverse but in essence it burns down useless wood and scrub and allows new growth so

Colin: but it's part of the system but what we do is not for the system but it's for us

Stersvevier/rubin: but we're part of the system

Colin: But we're moving away from being part of the system aren't we 'cos

Stersvevier: but we can't

Rubin: but when we're extinct in in whether it be thousands millions of years, the, you know, nature will do whatever it will with these buildings that we've and are nothing and will be part of the system again whether they degrade or they, they just crushed by the elements or whatever it is so I think it's an odd kind of distinction between those two things

Stersvevier: so everything man made returns to nature, whether it was from nature originally or more from us

Mickey: but a lot of the things, the elements you need a lot of the man made stuff is done with taking bits from nature

Rubin: Well it has to be

Mickey: all of the elements of nature so

Calico: that's where the arrogance comes from it, where we have divided ourselves from the animals where you go animals/humans keeping them separate

Facilitator: That's good, thank you guys erm so, what we'll do, we'll cover err three sections today and err the first one is just the general kind of use of nature so how people use it for their own kind of erm aims, objectives kind of thing even personal desires. First of all I'm going to show you an image and what I'd like you to do is just kind of give me your initial thoughts as to what you see and what you kind of think initially from seeing the image. So the first one is this image here...kind of thoughts, immediate impressions

Calico: Heavily managed, not a great use of the landscape

Mickey: it just reminds me of home 'cos I live in quite a rural area so back in Ireland so that just reminds me of home

Facilitator: so are we talking of the crops and...

Mickey: Yeah yeah lots of crops and lots of farming going on so, yeah

Colin: a controlled environment as everything is...nature in that way is being sort of, I wouldn't say tamed but sort of controlled just for a specific aim whereas nature in itself just does its own thing if you err you know

Mickey: It's groomed (laughs)

Facilitator: Any other thoughts or impressions?

Rubin: I just think hard work (*laughter from all*) see that is a lot of diggin (*more laughter and agreement*)

Colin: that's from machines and that

Calico: It's being utilised purely for human purposes, you can tell that by the way it's been landscaped, it doesn't benefit anything beyond human

Stersvevier: is that a good thing or a bad thing?

Calico: it's a bad thing

Stersvevier: so growing food and using nature is a bad thing?

Calico: the way we do it, yes. I can guarantee those are sprayed with pesticides and...

Stersvevier: but you don't know how they're doing it, you can't say they're spraying

Calico: well it's not a small farm

Stersvevier: that its genetically modified, you can't infer anything from it apart from its controlled agriculture. Its not exploitation

Calico: do you not think so?

Stersvevier: of what?

Calico: of natural life

Are you embodying nature with human attributes now saying that nature can be exploited

Calico: its, there are just being cleared there are areas left without insects beyond the flowers that are

Stersvevier: but you can't infer that

Calico: you can because you can say that

Stersvevier: How can you say that no insects live there

Calico: because they are only being used for the plants that they've got so they'll be pollinated but

Stersvevier: well how are they going to be pollinated? By insects

Calico: but talking about biodiversity of insects, not saying that there's going to be nothing growing there but it's not as nature would use, you wouldn't have the kind of diversity you would have if you were looking at a meadow

Stersvevier: but what was there before; was that better or worse?

Calico: most of the UK was

Stersvevier: well you don't know that was the UK. Wherever it is you don't know what was there before so it's hard to compare whether this is better or worse. That could have been a brownfield site, and industrial estate, a real dump, it could've been anything you don't know. It is what it is now but whether that's better or worse than it was, you have no way of knowing. Your inferring by seeing it as industrialised or or regimented, exploited

Calico: but do you think it's good or bad or

Stersvevier: I don't know, I can't make that judgement on it

Rubin: well I...

Stersvevier: I don't know whether it's bad or good for us as we're benefitting from it, from whatever crop is being produced

Colin: the the question is that's erm being controlled environment to grow a certain crop for human consumption one assumes,

Stersvevier: presume

Colin: Now the fact that we're getting the human consumption and we're getting the food so easily mean's our population rises; is that a good thing or a bad thing for nature that we become too many 'cos if it is, because we're too many that's a bad thing for nature then that is a bad thing

Rubin: but to think that we can become too many for nature

Colin: well we are

Rubin: comes with a certain level of arrogance as well. If we get too many...

Colin: it's not arrogance it's...

Rubin: we will, somit will happen that will, at which point there will be an imbalance that will cause our own...

Stersvevier: so nature self regulates

Rubin: we're not going to completely destroy nature. Nature could quite easily make us extinct if we were, if we go about things in the wrong way and at that point in time, nature carries on regardless there's *(slight laugh)* the, I errr, it's very difficult to see a point in time where we and nature aren't, are no, nature no longer exists at all...

Stersvevier: well if you take it to that extreme then you end up with a nuclear apocalypse

Colin: yeah

Stersvevier: so what's left

Rubin and Stersvevier in unison: is still nature!

Colin: the cockroaches *(Colin, Rubin and Stersvevier all laugh)*

Mickey: but like, yeah

Stersvevier: we just want to see it nice an rosey and sweet and flowers and little bunny rabbits and buttercups...that's nature but it isn't, you know, you see whatever there is, is nature

Mickey: there is destructive elements to it as well you know,

Stersvevier: very much so, I mean *(directing at Calico)* your going to be a tiger so if your not a vegetarian as a tiger so your gonna have an impact on the local eco systems . You're a predator, you have to exploit what else is around and available to you

Calico: but you don't get it by massacring everything within the surrounding area which is a thing that humans do

Stersvevier: well...

Colin: as we get more, yes

Stersvevier: as a fox, you go into a chicken coup, you don't just go in and take one chicken and take it away

Mickey: that's it that it's aimed at evolution as well and how well we've developed and the need and want for more or for greater mass comes down to...to this you know we look back at where we used to live, primitively, that's, nature was able to provide that for us. As we became more developed and kind of smarter as a species we kind of wanted more...

Rubin: But that's, that's an illusion of, that's not, that's not always definitely the case I mean Steven Pinker quotes an example in his book which is we have this idea that primitive people you know, lived at one with nature and they were great and things like this but you look at examples of native Indians when they're dealing with herds of buffalo, they would cause an entire herd of buffalo to stampede off a cliff and you take whatever you could carry back to the camp so they've just massacred a herd of buffalo, they've just, we've become far, far, far more efficient at doing it

Mickey: yeah, yeah, yeah

Rubin: errm

Calico: so that was the best way that they could get food to provide for themselves but they weren't only able to hunt on an isolated basis otherwise they would. When they introduced horses, that's what they moved towards

Rubin: yeah which is a, so, so we're a, we as part of nature, we change as will we dependant on our circumstances, errm and we, it might go one way where we might have

to control the way that we're using our resources and things like that but to say that that's not natural, that things are, that we are doing aren't part of that entire sphere of nature to me, well it goes well isn't everything

Stersvevier: hmmn (*in agreement*)

Rubin: a part, when a volcano goes off and destroys an entire continent, you still go

Stersvevier: so that's how we interpret it

Rubin: we still go that's still nature, grass is still and tree's and parks and things

Calico: so would you consider GM to be natural?

Rubin: (*1 second pause*) errm almost by, sort in, part of a way yes because its sommit that we've developed and we're a part of nature (*pause*) that's why I see it as being quite an ambiguous thing that you can say bricks aren't natural but well, people...

Calico: so in your definition is anything unnatural?

Colin: well everything...

Stersvevier: well I was with you until

Rubin: yeah

Stersvevier: the genetically modified bit and then that then

Rubin: yeah in know what you mean

Stersvevier: it scares me, it really does

Rubin: it, I wouldn't argue for it

Stersvevier: hmmn

Rubin: but to say that it isn't part of nature is...

Stersvevier: yeah

Rubin: I don't get where that line is if you keep re-drawing, you have to keep re-drawing the line as soon as you get a new technology that, that you think is altering something that you think is, that you have decided as a shared judgement shouldn't be altered, you call it unnatural whereas, you know, from my perspective, whether it's natural or not isn't the issue or whether it's against nature or you call it abhorrent to nature it's well are those effects gonna have something, some dire kind of effect on the rest of society or the world or whatever it is. That's separate to saying sommits not natural

Colin: so your

Calico: so do you consider anything to be unnatural?

Rubin: well no unfortunately

Colin: so what you're saying is that man does not control nature...he can't control it because he's part of it

Rubin: yeah, yeah, yeah, essentially I think

Colin: so we can't control

Mickey: there's elements we can control

Colin: yeah but no we can't 'cos it's nature so we can't control anything 'cos it's nature

Rubin: yeah so you don't...

Colin: you don't control nature

Rubin: you don't say when a, you don't, the reason why we don't believe we can control nature is because we've developed, we've got a method of reflecting upon it, because we, other animals don't go oh, hold on a minute I've just used these twigs to build a nest am I controlling nature here? Is this something unnatural? It's not, it's not part of what they do because they can't reflect on any of it. All of this idea that we reflect on what's natural and what's not natural, that's, that's just because we can reflect on these sorts of things.

Colin: well we assume that

Rubin: we assume that the other animals aren't ...

Colin: well we can't

Rubin: going oh, hold on a minute, am I doing sommit that

Colin: yes we assume that

Rubin: that's detrimental to nature you know and there's plenty of examples where some species have driven another species to extinction but they don't stop and go oh, isn't that a really horrible thing we did, is that. Aren't we abhorrent to nature?!

Stersvevier: So are we, well no, you can only say with animals, they're sole purpose is to procreate and to continue life (*2 second pause*) regardless of the consequences

Mickey: survival of the fittest

Stersvevier: so we're the only ones who've got a conscience aren't we...we think!

Rubin: we think, yes, but does having a conscience, does that mean we are not a part of nature anymore

Stersvevier: (*laughs*) no I don't think it does...

Calico: I think it gives you a responsibility because you know what your doing, you know what your doing can have an affect

Rubin: yes on everyone

Calico: so do you think that you need to be more responsible...

Stersvevier: so that's, that's learnt though isn't it?

Mickey: Yeah it all comes down to education and we've evolved and understood ways which is why I think we can, to some extent control elements of nature. If you look at the picture, what we're doing there is we're providing these with the nutrients for the way we want them to develop or the way we want it to grow or to keep certain insects off it. With what we've developed, we've kind a controlled it to some extent as we can't control weather, we can't control other destructive elements of nature but the way we've developed, we're way more effective at controlling certain elements and probably in years to come we'll become even more effective in other aspects. But other things will come and nature will, kind of adapt and other things will come even diseases like cancer now is probably one of the key things that is killing a lot of people but in years to come, we will have come up with a cure for it and then there will be something else there taking us so that's nature kind of adapting and (*1 second pause*) yeah.

Colin: so are we a part of nature or are we, (*sighs*) I dunno

Mickey: errr, well yeah

Colin: sort of we are controlling nature by what we do

Mickey: Hmmm (*in agreement*)

Colin: we are stopping nature from doing what it would normally do by our actions

Mickey: Hmmm (*in agreement*)

Colin: Aren't we?

Mickey: Yeah

Colin: so

Rubin: but we're part of what nature would normally do as well though

Colin: ah well we're not 'cos nature if you just leave it to itself, what would happen? If this, if we went away, what would happen? It would just, have vegetation here, animals but there aren't because man's come in and he's done these things, he's built, we've actually done the opposite to what nature would have done naturally.

Mickey: Hmmm

Stersvevier: but then again, we're natural so...

Colin: yeah it is but we are doing it, we're not going with nature as it would normally do 'cos it's got it's own system hasn't it?

Rubin: But do you ever, would you ever, if you go down to look at a birds nest and go that bird, has taken those twigs from that tree, if that bird hadn't existed, those twigs would be down there. Hasn't it done summing not part of nature? That's not natural, it's against nature. You wouldn't, you wouldn't say that about the bird, you say that about humans because of how, how different it is compared to...

Colin: we've built this

Rubin: we see...

Colin: to build this, to clear the countryside, dig it up, make it into bricks and build

Rubin: so it's almost the scale of the, of the modifications that we've made...

Stersvevier: but is that a good thing or a bad thing? It's just a thing

Colin: well I'm not

Stersvevier: it's just different, it's a change

Colin: we're doing it but we're altering, we're not working with nature in this case, we're working possibly against it because we're stopping the natural course of events

Stersvevier: but nature isn't always good

Colin: I'm not saying it's good or bad

Stersvevier: but by changing it isn't always bad then

Colin: well I'm not saying it's bad, I'm saying are we, we're not working with nature, we work to our own programme...don't we?

Mickey: Yeah, our own needs

Colin: not necessarily, sometimes it works with nature, sometimes it works against it but we have the ability to alter things whereas a bird, can't really alter that much. It can pick some twigs off the floor and make a nest, fine, but it can't, it can dig a hole, an animal can dig a hole to live in

Mickey: hmmm

Calico: but we're talking about it like it is negative because as much as...*(1 second pause)*
we are part of nature and all of that, the object of nature is to exist and procreate but if we are putting everything in concrete which isn't alive, and we're building and we're destroying things for more agriculture things and stuff, it's reducing the amount of things that are alive

Rubin: but

Mickey: but again that's coming down to the, can humans get this quality of life and kind of, yeah OK, if we went back to living in the tree's and going out and living like we used ta, we've now got used to this higher quality of life due to how we are developing and I know I

Calico: but it's wrong to do that

Mickey: yeah it is but it's down to kind of we've experienced this higher quality of life and then us as humans reflected on as this is what I wanted it to be and again, it may lead to more building buildings like this etc. yeah it may have negative aspects on the environment for other species but for us as humans it's improved things for us (21:22)

Facilitator: So with that being the case then, that reliance on, like you've mentioned Mickey, that quality of life, wanting to change things for comfort, that kind of thing, does that remove people from the natural world; does that make you less connected to the nature around you? Or are there ways that the way we interact and use nature in that respect can actually increase connectedness to nature as it were?

Calico: I think it depends where you come from, what kind of community you grow up in. People who grow up in a very urban environment it just wrote that you work in a supermarket and that you live in a high rise tower and there isn't that much green around

you and you've never had reason to interact with it. But is you've come from a more rural community or in local villages wherever, and you are more interactive as your more reliant on making sure that you have food, security and things that you actually have an input in rather than buying things off...

Stersvevier: does the converse apply then, does somebody who's living in a little rural village not understand the ways of the big city? Does he not understand how the internet works how, how tubes work or how the infrastructure of the

Calico: if they've never come across it probably not

Stersvevier: sorry?

Calico: if they've never come across it probably not. I'm not talking like western...

Stersvevier: but they are still aware of, of other worlds. I appreciate what you're saying that in an urban environment, people are probably less connectivity with nature and with the environment

Calico: but does their understanding of that urban environment has these differences does that then make them less connected to the world they're in than a rural community?

Mickey: It's down to your experiences as well you know like I know I came from a rural background in Ireland and to me, I couldn't, if you asked me to move to Dublin or to move to London I wouldn'ta be able to do it 'cos, I probably could've done it and adapted but down to what I wanted I, I like having the rural aspect to, so it depends on your kind of views . If you've never experienced stuff, you might be aware of it but the experience of is this something I want for my quality of life. Like if I was living in London, yeah I could probably be doing the exact same job but I wouldn't be as happy 'cos I like the fact

that in Derby, I've got a mix of rural and urban to some extent and that is just done to experience of us being humans and it's down to what my view is what quality of life is. (2 *second pause*)...yeah

Stersvevier: the lure to the urban err sorry to the person living in the rural environment the lure of the urban environment is greater than the other way around

Mickey: it depends on what your view...

Stersvevier: you're probably right it is I think, there's more to have...

Mickey: 'cos I know

Stersvevier: 'cos they know what they're going to get from nature

Calico: I think it's definitely an individual thing but I would disagree and go the other way

Mickey: 'cos I've got a friends who grew up in the exact same rural environment as me growing up but all they wanted to do was move to the big city if you like and they want to be in complete urban area but then for me it was no I want to, well me an a couple of me mates was we want to live in rural areas. I like having country walks and being around nature and parts of that but they're like I really couldn't care, whereas again, it just comes down to what you want because we have that ability and the to reflect on things probably more so than other species

Rubin: I think it's very much constructed as it would depend on what you value

Mickey: Yeah

Rubin: because for me, I perceive Derby as being quite rural compared to where I'm from, 'cos I'm from down south in Watford which and reasonably close to London then I'm used to things being open for longer hours, public transport being slightly easier to get around, things like that when I go back to Hong Kong even, it's, you know it's even more urbanified as things are open all night long and things like that. I see those things as positives whereas other people probably see them as negatives errm and I do understand that there are negatives associated with it; levels of pollution are gonna impact on your quality of life things like that as well. But errm, to me, particularly my partner errm, she quite likes rural environments, she likes going for long walks err she has an allotment plot and things like this errm, whereas I don't see as much value in that kind of thing but it's just, I think it's just different perspectives and it's part of the stuff is the values that her parents have passed onto her and her social environment that she's been told, you know that she feels these things are all very, very important as part of life (*emphasised*) and to quality of life. Errm whereas to me, a lot of the things to do with convenience and more urban living, I kinda prefer so I don't think there is a right or wrong to it, I think there is certainly a wrong if you go too far either way but to an extreme of either way in the same way that you know, all foods, it's kind of a balanced diet is what's advised, you don't stick to one pretty extreme, you know, if you refuse to move from that view, errm, but I think there has to be some level of balance in the world (*murmurs of agreement*)

Calico: Do you not feel that it would be different if you came from an environment where you didn't know there was an option, because you've been given the choice if you could live where you want, if you were from a community where you didn't know could move because over in other areas where you've chipped in and you all needed each other, would you maybe feel more connected to nature?

Rubin: yes possibly but not...*(I second pause)* when you say more connected to the world that you are in or more connected to nature, well the world that I'm in is built up of my experiences and, you know, that is the existence that I live with it. So yes if I came from a different community I, that, that perception would probably be different but I would be a completely different person altogether so I have no idea, you know I'd be, it's completely theoretical and hypothetical kind of question 'cos I'd probably completely different in the way that I am now.

Mickey: Well again, probably, I think at social class as well kind of it's going from kind of listening to my dad and when he was growing up you kind of, small house, five brothers, five sisters and mother and father kind of they relied heavily on nature 'cos they were farming everything was ok if they don't, if we had a bad winter or errr the spuds, the potatoes aren't gonna be and I know as mad as it sounds but that that's kind of their livelihood, they've relied a lot on nature and how that kind of how important that was for their stability sort of thing, erm, so yeah I think it depends if you've got money and if you've got all this I suppose that can take away from your feeling of feeling connectedness to nature because potentially you could, you can for living you can get by some people live, like if you're looking, if you look at the news and you see all these natural disasters and people's houses and livelihood taken away, that's massive to them and 'cos that's possibly all they can get by on.

Colin: Is it all down to need? I mean if you live in a, in the big city

Mickey: hmm

Olin: you don't need to err, you don't think too much about nature, about what's happening 'cos your too busy getting by.

Mickey: yeah

Colin: and if you live as you did in the country, you were farmers, you were, you cared about nature and keeping everything ticking over. In the city we don't have to think about it 'cos foods in supermarket, how it gets there

Mickey: yeah, out of sight out of mind I suppose

Rubin: but is farming natural? 'cos...

Stersvevier: well it's also a very perilous environment as well when your living from hand to mouth

Mickey: yeah

Stersvevier: the potato famine in the 1800's

Mickey & Colin: Yeah

Stersvevier: showed so your living in a very, very delicate balance, relying on the resources around you but if they fail...you know, here if the supermarket's shut I can go to Sainsbury's instead of Tesco's

Colin: Yeah

Stersvevier: but there it's life or death isn't it?

Mickey: and that's how we've developed

Stersvevier: so surely if that eradicates that risk is an improvement so aggreiculture

Mickey: that's what I mean

Stersvevier: yeah

Mickey: big time 'cos that's the way we do it is about kind of, it's about having that balance of want and need

Stersvevier: yeah

Mickey: it's the, well ok, what is it that we need? Ok, what is it that we want?

Stersvevier: but then it goes on and becomes exploitation

Rubin: yeah but it becomes, it, the idea of what do we need, you kind of have to consider what do we need for what? I mean what do we need in order to survive is very different from what do we need to have a society where you can have people doing PhD's and you know, going, doing all of these sorts of things. Ok, do we need to do those things is another question that maybe we should ask

Mickey: which comes down to...

Rubin: that maybe we need to reflect upon a little bit more but, just saying it's a distinct difference between what we want and what we need I don't think that it's just two categories there.

Colin: No well, it's not what we want

Rubin: it's a very broad...

Colin: everything we want and need in the supermarket or we've got a house and all that sort of thing and city, if you go to the rural you have to nurture it whereas if you don't in the city because someone else is doing it for you. So the people in the city don't think about nature too much 'cos they don't have to. But the people in the rural areas and

farming have to think about it, have to care about it after nurturing it because we're busy doing other things.

Mickey: I think if you went to get a glass of milk and you can just go to the shop next door or bang a stair, you're In the countryside where it's ok, I've gotta have the cow, then I've gotta milk the cow and the whole process of ok, what do I need to do to and then drink it and I want to, how am I gonna nurture this to then it...do you know what I mean?

Rubin: yeah but, but I think that applies for everything including nature, I think we're encouraged to think about natural processes currently because it's quite a hot topic at the moment, far more than your encouraged to think about other kinds of processes that are doing things for you I mean people complain constantly about petrol prices and things but you when your filling up your car do you go ah, hold on a minute, this has been dug out of somewhere and they've had to refine it about twenty times and there's, there's a dozen blokes on a, on a rig somewhere, you don't think about all of those processes, those man-made processes that we call them

Colin: that's because we don't have to 'cos someone else is doing it but you go to his farm, he's having to do that on the farm but he's also got to look after the, the environment because if he doesn't, it won't work! We've controlling our environment to some degree so we don't have to bother too much and that's why people are, to me, are less concerned about what happens out, to nature, call nature is the environment

Mickey: yeah

Calico: I think it's...

Colin: control it

Mickey: I think it's come down to how easily we've come to get things

Colin: yeah

Mickey: convenience massively 'cos yeah if we have to go through all this process, say for a glass of milk or even look at things like kind of stuff that we get so easily and so readily we, it just becomes, well fine. I can, I can do it whereas if years and years ago and that wasn't available and to kind of look, in order for us to have a steak dinner, this is gonna require this this this this and this and as we've developed, it's as you say you don't, when you go to get your petrol it's just yeah fine, it's easy

Rubin: but you're not...

Stersvevier: but you having that steak dinner still requires those processes...

Mickey: yeah yeah

Stersvevier: it's just devolved into somebody else doing it for you

Rubin: and that's

Colin: and so

Stersvevier: it's civilisation

Mickey: yeah that's what I mean, it's not just a total reliance on say if you have to do everything it becomes totally self-sufficient on yourself then you have that much more connectedness I suppose so you know (*sighs*) that's just how we've evolved. (33:00)

Rubin: yeah but it's kind of, it's (*1 second pause*) I, I get this whole idea that if we had to do a bit more we'd all be a little more connected to the environment, however you want to term it

Colin: Yeah

Rubin: but portraying it in such a negative light but I think it also allows you to do a lot of things that society has become reliant on, and you might say we don't need those things, we don't need specialisation of education systems or people, you know, everyone should just be pitching in and just growing food and stuff

Colin: that's what the Chinese try

Rubin: I kinda like I don't think I'd see that as a utopia. I quite like that there's someone who grows loads of food for all of our nurses who then go and look after the sick people in the hospital and that's part of society and there's also people who grow loads of food who feed our teachers who teach our young people who grow up and maybe the balance that we've got isn't right but...

Mickey: Isn't that then, that's improving our whole quality of life

Rubin: yeah

Mickey: which is essentially yeah but then it comes down to it's that, I know it's a broad term but that want and need. Like for us to survive we can get by on this, this and this

Rubin: for us to survive we wouldn't need, as a species, we probably don't need hospitals, we don't need schools

Mickey: I'm just saying

Rubin: we don't need any of this stuff but I quite like all of that stuff (laughs)

Mickey: I see what you mean, I'm not taking away from it...

Stersvevier: nature's perceived differently and is its own special case

Mickey: it's one of those things that's again down to want and need either but yeah I love it because I get to live longer, I get to have a better life and I can do all this but it's again...

Calico: Do you see it as a balance between quality of life and the things you enjoy and not slightly selfish when we look at the global effect its having on in terms of thousand fold of species increased extinction

Mickey: Oh yeah, big time, I agree

Calico: Is that not in need of balance a little bit more?

Rubin: Yes!

Stersvevier: with what the thousand fold...?

Calico: increase in extinction rates

Rubin: yeah, yeah it's certainly a legitimate argument that we, we need to do some serious reflection on all of these things but I don't think it's...

Calico: but is that not motivation enough to change a lot of things about your life and how to limit your own personal impact? Because most people are too wrapped up in how they are and what they enjoy

Rubin: yeah (*spoken slowly, as if considering*)

Calico: and what they do to actually...

Stersvevier: on the actual extinction side of things, I mean I won't quote it verbatim but it was on the radio the other day, I just heard it in passing that 95% of the species that have become extinct were extinct before the dinosaurs were on the earth so the impact of man

in terms of the overall extinction of species that have been around is an awful lot less than we perceive it to be. In other words, tens of thousands, hundreds of thousands of species evolved and devolved and failed and then disappeared long before the impact

Calico: yes but we can

Stersvevier: of man, we only know about the one's that we've had an impact on; we've sort of seen in our recent history.

Calico: with fossil records and everything, it can tell the rate of how extinction happened as a, 'cos that basic indicator of how it happens as you get sharp increases when you have like dramatic

Stersvevier: well all I was saying is that that happened before man had any impact on it so that's nature

Calico: but in our own period, when we are having an effect on that increase of a thousand fold; that is what we know.

Stersvevier: that's a thousand fold on what? Before man was around?

Calico: yeah

Stersvevier: but then there were no measurements

Calico: we have fossil records to see that

Rubin: But even, even then you don't, although we, you might say we've caused this massive rate in extinction, you could also say that an asteroid hitting the earth would cause massive extinction you know,

Calico: But that's not something we could avoid, this is something we can avoid and that we can work towards avoiding more in the future

Rubin: Yeah

Calico: but will we when it comes to: 'to do this, this is how I like to be' will people sacrifice the things that they enjoy like hovering the carpet as opposed to using the dustpan and brush?

Rubin: I suppose that's, that's one of those elements that we argue is down to our nature and that will we make those choices to make those changes is kind of part of, you know, part and parcel of whether we will be able to make these changes within society or culture as a whole.

Mickey: I think we've started to some extent 'cos if you look at, to even recycling having all these new ways of kinda like this bin does this, this bin does this, this bin does this, ten years ago, fifteen years ago that was never the case

Calico: we didn't have as much crap that we needed to recycle

Mickey: yeah I know but the fact that we've we've it's not still just black bin; dump everything in there, get rid of it, dump it, stick it in the mine I don't care but we've started, startin to reuse things. So I know we're not doing it as well as people think we could but we're starting to make that awareness.

Colin: Because we've had to because the mineshafts are running out

Calico: have

Colin: the landfills running out, what do we do with all of this?! So we've had to change, we've had to adapt and the other thing that has always struck me is about the human being, it appears to be something like a bacteria 'cos what that does, it starts off with a lag phase (if you've ever done bacteriology) yeah? And then we go to the height of activity and then it creates an environment which is so toxic it slows down and finally destroys itself. But by then something else grows out of that or can do. So it, the, if we don't get our heads round it, we are just like a bacteria

Mickey: I don't know

Rubin: but that's just because we can reflect on it, if we are just like a bacteria, that's what will happen and nature will keep going on regardless you know after

Calico: given that

Colin: well no,

Calico: given that we can reflect on it

Colin: yeah

Calico: and we know what the end will be

Rubin: and we can act upon it, yeah we can

Calico: we should not cause our own suicide

Rubin: yeah I suppose that's a legitimate argument but whether we, whether society manages to do that, which I kinda doubt that it is actually going to be able to come back from

Colin: erm

Rubin: the brink, erm but that's a personal opinion on it but I'm sure there are plenty of people, we need people who are campaigning for it to go that way erm, in order to make any kind of shift or change but you need people to feel very sure on it

Colin: if your right then Ryan might was well pack up his bags and go because we're never gonna change it, what Rya...

Rubin: erm well to a certain extent that's what I think

Colin: 'cos that's what you're saying

Rubin: well I think almost all actions that we have as a, we kinda have this self-perception of all of our actions have, are mightily important and and you know being massive in, in whereas when you actually look at it we're a pretty small blip on the timeline of existence

Colin: well we maybe a small...

Rubin: so we're, it has to be meaningful to us

Colin: yeah

Rubin: but you know, to think that we're going to completely ruin the earth for everything else or the universe, you know it's very

Calico: with the purpose of our existence is our species procreating is the point of biology then we should, we ought to be trying to preserve it in a state that we can survive in.

Mickey: oh yeah well I agree

Stersvevier: well the future can survive it in some form or other it just

Calico: without humanity

Stersvevier: just not in the form that we are accustomed to here

Colin: that's right

Stersvevier: again that's nature again. We're back to going full circle. Just because it's not the nature that we're used to i.e. is not the experience we are used to or want or like or feel in charge of

Colin: well the thing is that we can alter our actions which will alter what happens to the earth. We, we can't do all the things that we've done and not have any affect I mean the reason we have floods in places because we take away the tree's, build things on the floodplains, pushes the water out of other areas so we're, we alter our own environment. We're altering it in this case for the worst but we have the ability to alter it for the better but it's convincing people and getting people to alter the way that we, that they think. Well that's what...

Mickey: Yeah to change their quality of life and to some extent

Colin: yeah but we're, we say that if we do that, we'll be saving our quality of life

Mickey: but the things is I, well this is just my personal view, as much as I know it's great, everyone wants a great quality of life and we can sit here and go well yeah if we change this in little ways, well I've heard people go well it's, this, the changes I make now are not gonna impact in my lifetime; it's gonna be my grandkids and I know, I know this is, like I don't agree with them but a lot of people think that well actually this isn't my problem

Colin: yeah you're right

Calico: but it should be important enough if...

Mickey: it is for us like if there is people that would say yeah and I understand the benefits and I don't, I'm not agreeing with the people who say it but I know so many people that just go 'well it's not my problem'.

Colin: but it is when the err tornado strikes

Mickey: oh big time

Colin: or when the floods come

Mickey: oh I know

Colin: but until that happens or...

Stersvevier: well there are still people who smoke

Colin: yeah

Mickey: it's the people who drink and they know it's

Colin: yeah exactly

Mickey: the quality of life

Calico: well you kind of have to be forced into changing for anything to really happen like we aren't responding unless something really dramatic...

Stersvevier: you can't force people to change, it's not, you can't force people to accept your views

Calico: if only you could...

Stersvevier: or interpretation of what's right or wrong onto other people

Mickey: errr I agree

Rubin: well you can but it's normally called a dictatorship!

Stersvevier: yes (*all laugh*)

Facilitator: So in that respect then, how do you, is, is getting people to, hopefully voluntarily more connected to nature, to appreciate it more, all these things that you've been talking about, is that the way to get people to change or is there something else that needs to happen?

Mickey: I, I personally think in order for the whole of human's to change their views and the way they do things, something massive has to happen in terms of if there's a massive natural thing that says this could've been changed by that then people will start going 'holy shit, maybe we could've done this a lot differently' but I don't think the majority of people would think that they would change unless something massive impacts their way of life. And I know, that's the only way people can say well yeah being connected to nature in this and my interests I enjoy this and I enjoy that but if that's not going to impact on their quality of life...they might, they might feel bad about it for a minute or two but then they just carry on with their day to day lives until something comes in and just drastically impacts their quality of life and it's something that they had the ability to change; will they do something? Because it's as again when your, if it's not, if you can handle it why are you gonna bother with it? It's not changing my quality of life here, I can get by with it, until something comes in and threatens that it's under those kind of environments where your being threatened when you then make the greatest changes as 'I don't want to be in this environment no more' but if it's not impacting me then, I'm not

saying this is my view I'm just saying a lot of people think that and going why am I going to bother?!

Rubin: yeah but it's, I don't think you, in terms of personal values, I don't think any changes at the individual level are going to spread and change the value set of society as a whole and we know, we measure, we rank countries by their productivity and GDP which you know, there isn't an, you don't rank countries at the moment by you know, how efficient they are or you know, how, how connected or how well they are doing in their environment and until that kind of thing changes

Calico: In a way they are trying to though, erm, they have summits to set CO2 production in industry on a global scale so they're trying but I completely agree they are, it's not going to be an option

Rubin: They've had summits for the last decade...

Stersvevier: it's difficult to say to someone in India that you can't have your refrigerator you know but we've got all ours equally it's difficult to say to someone over here oh stop smoking or stop producing greenhouse gasses when India and Russia are opening a new nuclear power station literally every month and three hundred and sixty coal fired power stations a year and you think of the scale of what I can do and what I can achieve or what Derby can achieve or what Ryan's study may achieve it's, it's, you know blowing in the wind a little bit.

Mickey: I think it's down to people go well, this is all being done around the world already so what's me not doing it? It's not going to make that much of a change me personally.

Calico: so what everyone should quit?! You can make a difference...

Mickey: some people think that if I do this what sort of difference will me, as one individual gonna impact on it? So it's about changing that view.

Colin: yeah the view will be changed if the people see a need

Mickey: yeah

Colin: so what you've got to do, you've got to create that need in them either by fear (*laughs*) or by, you know what's going to happen if we don't but for that you've got to show 'em what's happening you can't just tell 'em, you've got to actually...

Calico: but even then with, I've done a lot of environmental campaign work and stuff and from my course and we do that but everyone in my class is still a hypocrite; they all drive, they smoke, they eat meat, it's just like you know, you're educated people who are then going off in the future to teach people this stuff and it doesn't make a difference to you what goes on

Mickey: personally I think a lot of it as humans is developed it is that fear. If something is gonna be taken away from you, you're gonna do everything you can to change to keep that there

Calico: but is that true? We use, we over fish the oceans, people know about it but we're still not stopping it to let it recover

Mickey: yeah but still I know that but right now but I still go down to the shop I know, I know that but everyone does, you still go down to the shop and there's fish there

Calico: there's everything there but there are people who have made a choice, like I've chosen to abstain from eating fish

Mickey: yeah but then that's down to quality of life (*laughs*) like do you know what I mean? Like I still gonna have me dinner

Calico: exactly so it's still want versus need

Mickey: yeah

Colin: is it a political thing? (*2 second pause*) politics is the way to change it

Calico: I don't think politics is the way to change it as it is not respected by people anymore, not on our kinda generation, maybe older generations

Colin: the things is we're all governed we all have governments, every country err has governments whether they are good or bad and it's, if you work at it from the bottom you can do very little but if you work it from the top and feed it down you can do more.

Calico: we have legislation for a lot of things but people always love to find loopholes around getting their own way

Colin: it's not a thing for individuals in different countries it's a worldwide thing; it affects the world. You know, what we do here affects them in Somalia

Rubin: yeah but how, how can you get consensus? There's, there's 'cos the government

Colin: well I know how you get consensus

Rubin: 'cos the government is supposed to be for the benefit of its own people

Colin: Yeah

Rubin: if you as the western world go right, OK, we've gone through all of this industrial stuff, you guy's need to stop what you're doing err because it's making the world a really

nasty place to live in, we've already done it you know, the rest of the third world is going to go well how about some re-distribution of that wealth where...

Colin: exactly, that's it

Rubin: you've been selling these industrial components involved in manufacturing that you've given us and shipping it over to you so hold on a minute, so it's, I don't think politics is going to provide a consensus on that, unless there's a massive disaster which someone goes hold on a minute, something really, really bad just happened and then loads of people died and and...

Stersvevier: so basically you're growing potato's very nicely until there's no reason to grow wheat or barley until the potato crop fails and then it's too late

Mickey: yeah that's, that's how we roll

Stersvevier: that's the nature of, we've all got our vested interests

Mickey: our greatest and worst weapon is our brain; we think with it we're going well no, this is what I want and what I need as opposed to thinking ok, for us to survive what is the best course of action? It's just no, I just want to eat my fish or whatever, it's because I'm thinking , we are just selfish (*1 second pause*) species like there's just...

Rubin: yeah but aren't all species selfish?

Mickey: yeah

Rubin: it's, you know...

Mickey: we, we, were different

Stersvevier: we're better than

Rubin: yeah yeah

Mickey: yeah well

Rubin: we're more efficient, err

Mickey: we are in like, in terms of on earth, probably the most word I'm trying to think of...

Rubin: damaging

Mickey: damaging! The most probably, what am I trying to say? We, we can change a lot or we can perceive

Colin: most intelligent

Mickey: yeah the most adaptive and intelligent species because look at the impact in...

Calico: well animals can be selfish but something keeps them in check; if you're a predator, they maybe eat too much prey, suddenly they die back a bit

Rubin: which is essentially ...

Calico: we don't have that kind of thing

Rubin: do you not think so? Do you not think that at some point all of these disaster things that we've been talking about well, will come back to bite us really, really hard and we'll, suddenly we'll go oh, look how powerful nature is?! We can't really manage it half as well as we thought we could and when we do start to manage it really, really well, erm, bad things happen. Really bad things happen that's, I think we're just going to be as governed by these rules and laws, it's just we think we're above them.

Colin: we, we're managing and that sets us apart from the other animals 'cos they don't, they live with it but we manage, we try and manage it. I'm not saying we do it well but we try and manage it and that's how, that's the difference between the bird out there and us. 'cos that's living with it.

Mickey: but even, even diseases that us as humans, us as a species got and we come up with antidotes for and that will constantly happen and that's why we haven't dies out as a race. Like things we had smallpox

Stersvevier: we still have

Mickey: we have to some extent but we, but that was a killer thing years ago

Stersvevier: it's coming round

Mickey: whereas we, cancer is probably the world's number one at the minute but what will happen in, I dunno, fifty, sixty years we'll have got a cure that's a lot more manageable but sommit else will come along. So were just able to adapt and we, we can progress with us as a species don't become extinct

Rubin: yeah but we're just better able to adapt at the moment. At some point we won't be able to adapt to changes and

Mickey: no, no I agree

Rubin: and society will either fall apart or reduce the population numbers and if there are any of us left to carry on reflecting upon these things we'll reflect on it and go ooh, look how powerful nature is and at that point we'll be more connected

Mickey: no, no, I agree

Stersvevier: or will they be happy just with what they've got? It's all comparative

Mickey: I think the human race will not die out because we have, we have that ability but it will come down to

Rubin: I think it's ridiculously arrogant to think that we won't die out. I think, I think we will...

Stersvevier: no, no, I agree

Rubin: yeah, in the grand scheme of things we will, we are a tiny little blip

Stersvevier: as you say we are insignificant

Rubin: on the timeline

Mickey: yeah

Rubin: of what's happened

Mickey: no as a race I don't think we'll , we won't become as humans, we'll become extinct is what I mean

Rubin: I think we will

Mickey: I dunno, I think we will, we have that way to bounce back

Rubin: we are susceptible to

Colin: it depends all on how we progress I mean if we do manage to err find a way of travelling in space, we may destroy this planet and go to somewhere else and destroy that one (*laughs*)

Mickey: I'm saying in like the dinosaurs. If you look at the dinosaurs...

Rubin: there's got to be some limit, at some point whether it's across some one hundred planer empire that we've got or, we're not, we're not gonna manage to, as a species to keep living forever! To think that we are above nature and that we are so powerful that we can control

Mickey: what we have is the, if you look at going back to the dinosaurs, when they ruled and all that, we were able to have things as like, we can reflect on things and come up with other ways such as damage limitation and we can come up with ways to, to make sure we stick around

Calico: we could can predict the kind of things that are going to happen

Mickey: yeah, I'm not saying as in the human race is always gonna be between six, ten million, billion sorry, people on the earth. I'm just sayin as a race there will always be, that's just my personal view, there will always be humans...

Colin: somewhere

Rubin: I think the cockroaches which is the only one that, that's kinda similar to that

Calico: yeah but if we go to a nuclear fallout, we know that this at some point may happens then do you consider digging down into the earth, create our little bunkers and make sure our...

Colin: well that's already been done

Rubin: and we're so confident that we as a race will continue to survive but at some point those laws and those rules about how many members of a species need to actually survive, need to be able to procreate healthily and need to have that level of food. We're

not immune to those laws, just because we can, things are reasonably good now and we can control things, grow huge amount of crops, great! but

Calico: I agree

Colin: but that's why we should be doing something about what the, the damage that we are creating 'cos that's gonna wipe us out eventually if we don't . I'm sorry folks, I'm going to have to go.

Facilitator: well I think we'll have to draw it to a close anyway as it's been over an hour but thank you very much for taking part and I hope you've found it interesting. Make sure you take this debrief away with you...

Appendix 4.5 Focus Group Two Schedule

1. Explore how the nine values of the Biophilia hypothesis relate to nature connectedness.

2. To investigate the factors involved in developing a connectedness to nature.

Value	Definition	F.G. Term	Key Words
Aesthetic	Physical appeal and beauty of nature	Pleasure from viewing nature	Inspiration, harmony, peace, security
Symbolic	Use of nature for metaphorical expression, language, expressive thought	Expression through nature	Communication, mental development
Naturalistic	Satisfaction from direct experience/contact with nature	Joy from contact with nature	Curiosity, outdoor skills, mental/physical development

Begin by ensuring the Connectedness to Nature Scale has been completed (if not, administer the scale) followed by introductions by the group members, giving their name and if they were an animal, what would they be.

Q. What do you think NC is? Create a ‘mind map’ that all the members can contribute to.

Present images of famous landscape paintings and ask the participants to speak about their initial thoughts/feelings.

IMAGES REMOVED DUE TO COPYRIGHT

Q. How can nature connectedness be developed by viewing nature?

Prompts:

Beliefs/Attitude:

Alters perspectives, art, sculptures, inspiration, moves you

Social Factors:

View with others, friends, family, work, hobbies/interests, paintings, documentaries/TV

Affect:

Joy, deep, meaningful, purpose, pleasure, awe

Present nature-based phrases and ask the participants to speak about their initial thoughts/feelings.

It's raining cats and dogs A bird in the hand is worth two in the bush

Birds of a feather flock together An apple a day keeps the doctor away

Like a bull in a china shop Busy as a bee

Q. How can nature connectedness be increased by expressing yourself through nature?

Prompts:

Beliefs/Attitude:

Language, attitude, symbolism, closeness, perspectives,

Social Factors:

Sayings, names, labels, personal meanings, special, important, conversations

Affect:

Deep, meaningful, immersed, purpose, pleasure, awe, connection, wholeness

Present items grown on an allotment/garden and ask the participants to speak about their initial thoughts/feelings.

Q. How can nature connectedness be developed by having contact with nature?

Prompts:

Beliefs/Attitude:

Appreciation, wholeness, pleasure, purpose, satisfaction, nurture of animals, trees

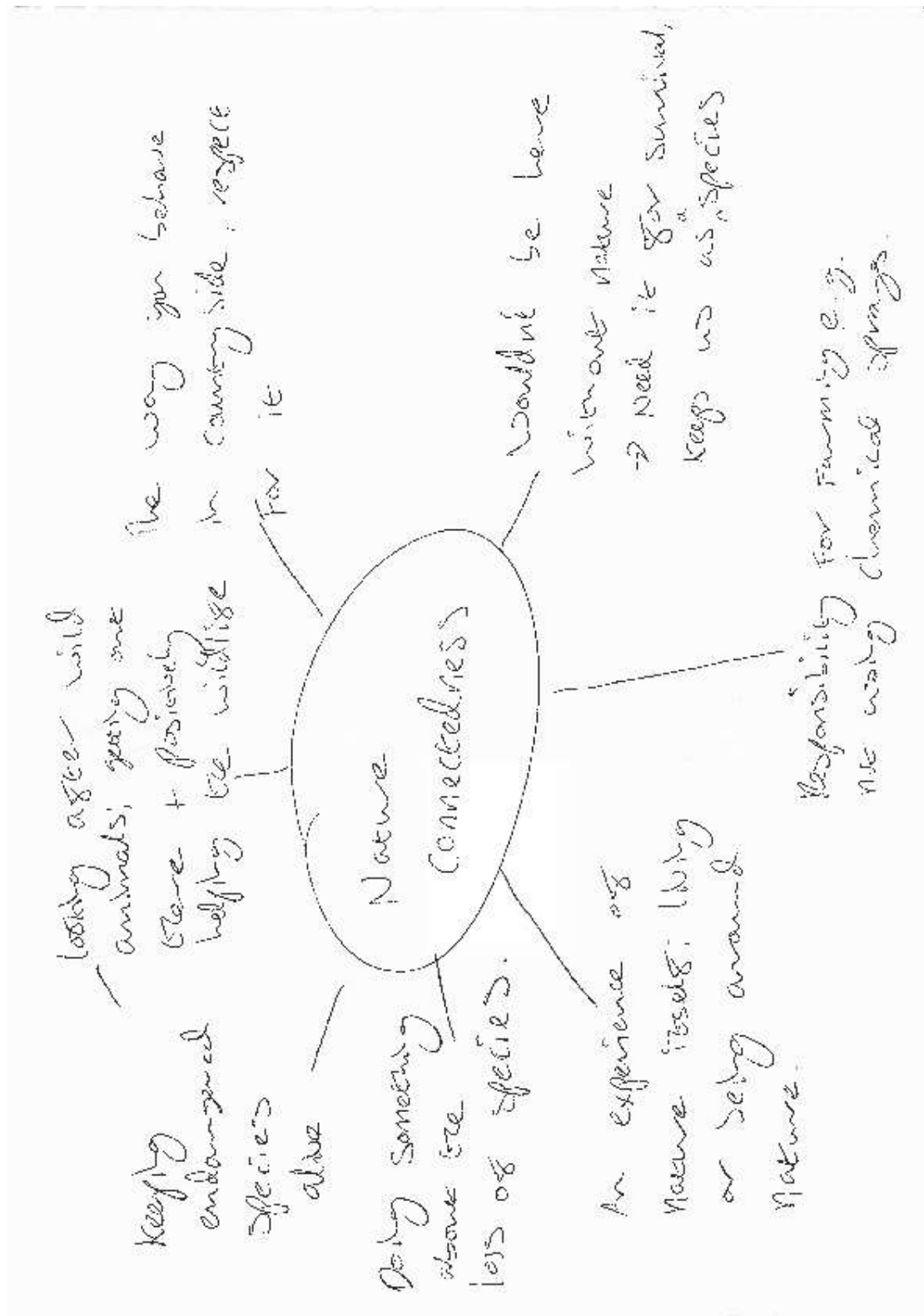
Social Factors:

Activities with others, contact, immersed, place

Affect:

Connected, surrounded, tears, joy, freedom, alone with nature, peace, serenity

Appendix 4.6 Focus Group Two Mind Map



Appendix 4.7 Focus Group Two Transcript

Facilitator: What I'd like to start off with, erm, feel free to use your real names as obviously they'll be changed during the write up, if you'd like to just do a little introduction just, erm your name and as we're looking at nature connectedness today, if you were an animal what you would be and why. Go for it Don

Don: (1 second pause) oh, what sort of animal? I suppose it would have to be a lion 'cos its strong; king of the jungle

Facilitator: fair enough, very good (laughs) Keziah?

Keziah: erm I would be a Orangutan because I think they are, they have a lot of problems and I think they need to be quite strong and I think they're very lovable things, very intelligent and a lot like us.

Facilitator: Sounds good, excellent, Frank?

Frank: Errrm, something like a bird of prey, like eagle or sommit like that 'cos I think they erm obviously they can fly err and just they can, just like how they are and they're the biggest prey hunters and things like that.

Facilitator: Yep, cool. Sounds good, excellent. Erm, you obviously know each other a little bit. So what we're going to do today, we're gonna look at nature connectedness so you've all filled out a scale which erm, is used to errr work out how connected to nature from a psychology perspective but actually what I'd like to start off with is to get your views ad opinions of what you think nature connectedness is. Feel free to give me just any kind of answers you want, I'm going to put it all on a mind map so we can actually see and have an idea of what you guys think so feel free to start. Has anyone got any ideas what they think nature connectedness is? (2 second pause)

Keziah: erm, by the, by the way you behave when you are perhaps out in the countryside.

Errr, how you treat the countryside; your respect for it (3 second pause)

Facilitator: brilliant, thank you. Anyone else?

Don: oh we probably wouldn't be here without nature would we? We rely on nature (2 second pause)

Facilitator: so what is nature connectedness to you in that regard?

Don: (3 second pause) we wouldn't survive especially for bee's and things like that, they keep the universe going don't they

Facilitator: yep (5 second pause) Frank?

Frank: errrm, like experiencing nature itself, so like going on, like camping and things like that so you're actually experiencing nature as itself rather than being, rather than just looking after it, you've gotta be experiencing it by living or by err being around nature itself (2 second pause)

Facilitator: any other ideas?

Keziah: by actually being, well by looking after wild animals, rescue centres' that sort of thing. Positively getting out there and helping the wildlife (4 second pause)

Facilitator: any other ideas? (5 second pause)

Keziah: with respect to farming, having some responsibility before using chemicals with sprays, things like that 'cos that can have a nasty erm effect on nature. (9 second pause)

Facilitator: and any others?

Frank: looking after endangered species

Facilitator: yep

Frank: trying to keep them alive and that

Facilitator: anything else?

Don: the world is just realising now that animals and plants they, they're going, we're losing them aren't we. And they found out now that we've got to do something about it before we've lost them all and it's a big proportion that we're losing

Facilitator: cool, that's really good. So, what we're going to do, we're gonna have err some prompts that I'll show you. What I want you to do is as you see the prompts, erm, just give me your initial thoughts or impressions about it and then I'll ask you some questions and you guys can just discuss what you think about that particular area. So I'll start off with the first one and I'll show you the first one here, and I just want you to kind of give me your initial thoughts/impressions on it (shows pictures of Monet landscape paintings) tell me the first thing that comes into your head

Frank: the top one's looks like it's been well looked after, respected. They have good pride in nature and stuff. The bottom one looks like it's a town or city with more set on the human population rather than looking after 'cos obviously they've knocked down a lot of trees and plants

Don: it reminds me of a old house, a bit like chatsworth but not as grand, with the, with all the gardens, that they used to have in those days but as today you can't afford it

Keziah: it looks like a national trust place

Don: that's right that's the word yes, it looks like it's been looked after

Keziah: on the tip of a city

Don: and that could be a pond, the bottom picture could be a pond for the house

Frank: I don't think it is 'cos look there's the city, there's factories there

Keziah: that's a reservoir

Don: a reservoir yeah. But it could belong to the top picture couldn't it

Keziah: it could but I think there's a difference

Frank: I think that's'...

Keziah: that's in the countryside, that's in a town setting the bottom one

Don: maybe so...yeah

Frank: obviously more people with more money are able to keep like more nature 'cos they've obviously got more money to spend around

Keziah: they're bigger

Frank: they're a bigger house yeah whereas people in the city haven't got as much money and smaller err properties

Facilitator: cool, so these are both pictures by Monet in fact

Keziah: but different scenes

Facilitator: oh I think yes

Keziah: one's winter, the other is summer I would say

Facilitator: yeah so that was a visual image of err nature so erm the first proper question then is how can nature connectedness be developed by viewing nature? How can somebody increase their connectedness to nature just by looking or being around nature in that respect.

Frank: if something's not looking too good like if something's dying you might wanna do something to help it survive so obviously plants; watering 'em, animals; feeding 'em, things like that.

Keziah: one thing is erm a lot of litter around in the countryside or wherever you are 'cos and graffiti and stuff like that. That has some impact on vision as it doesn't look very nice does it?!

Don: instead of letting it go to rack and ruin, they're trying to keep it as it was, as it was first made and produced and instead of letting it go to wilderness, somebody is looking at it by the looks of it which costs money so you must have to be somebody of some importance.

Keziah: well yeah you've got to put money into it

Don: put money into it to do it yes

Keziah: and that's whether it matters or not to people, or government or

Facilitator: so what do you think alters how nature matters to people? How can that be changed?

Keziah: by making them aware, by making children aware at school by bringing in, sort of gardening things like that into the curriculum by bringing it into maths, English, all

these things in these subjects and err, using gardening together with that and making it so that they are actually interested in it and enjoy nature

Frank: the problem is though, everything now is getting into technology so it's more obviously computer based things and not and none of them like, we're obviously producing more pollution 'cos of electricity, power plants so 'cos of that massive demand, we can't really say that we're gonna reduce pollution that much 'cos've how big. How needed we are with technology and cars 'cos it's difficult with that aspect and with schools they really want to home in with the computers and 'cos it's the way of life now. So it's difficult to teach it in schools

Keziah: no it can be done if you slow down

Frank: it can be done but yeah it's more difficult although 'cos they've got all the massive demand for all the computers

Keziah: no, no the recent work done erm, where they've actually incorporated it into schools and they were quite complimented by offstead by it as they've incorporated it into the subjects into the work that they're doing in the garden and erm, I think it was princess royal visited erm and she was absolutely amazed at what that teacher, she had a lot of input from the other staff but it actually brought the rewards 'cos they knew where, a lot of the children didn't know where their food came from; they thought cheese grew on trees, they had no idea. They didn't know where fish vegetables

fingers came from, they thought it was chicken and things like that so yeah, you laugh but a lot of children don't know and so what they did they grew vegetables and so they knew what the root vegetables and where, which part of the plant they ate and things like that

and so that was brought into counting out the seeds and you know, things like that.

Everything was incorporated.

Frank: the thing is though, when it gets to the things at secondary school it makes it more difficult 'cos of exams

Keziah: well yeah but I'm talking about very young children and that's introducing it so that maybe they may go on to some that aren't academic maybe would go on and do things like that like gardening...

Frank: the problem is it's not consistent, if it's consistent for all the school years...

Keziah: but if it puts the seed of interest there then it's something that may be carried on

Frank: yeah but

Keziah: but you don't have to dismiss it do you?

Frank: no, no

Don: well a lot of youngsters have never seen a cow or a lamb, sheep only pictures on television. They've not seen *them* in the fields. I've taken youngsters out and they've never seen a cow or a sheep before so I know I'm going back a few years but it happens and it could be that today.

Keziah: that's why they go on trips to farms for nursery's

Frank & Don: yeah we know

Keziah: so they actually get to know about the animals and things

Facilitator: so what do you think about going on these trips or viewing kind of nature in that respect; how does that work to make them more connected to nature?

Keziah: well it shows them what's out there so that they're aware of what is around them so it just draws them in to being interested and to caring for things so that hopefully in the future they may want to take some care of the environment and all the wildlife. You can only try and encourage that is, that is the only thing with children that you build on that for the future.

Facilitator: So do you think that it's key to target children when they're younger or...

Keziah: I think so yeah

Facilitator: can it be done when they're a bit older or even as adults?

Keziah: you can

Don: it can be but when they're younger the better int it?

Keziah: surely, surely it's the very youngest one that you start with and then, then hopefully they can then get that through but a lot of what you find is that it's usually the infants schools that do it. Errm and it's their choice isn't it? But certainly I.T. does go against that errm and puts it, the world's moving too fast I think.

Facilitator: are there any ways where kind of, technology, the way it's taught that kind of stuff could actually feed into getting people or children more connected to nature?

Keziah: I don't know as, as you know I'm a technophobe anyway which is a downside to me not knowing how you would do that. All I know is, with it being a governor at a special school, errm I know because they do a lot on growing things. They've got the

polytunnels, and because they aren't obviously academic, they base a lot of their work on art and citizenship basically skill to help in the outside world and or gardening and they grow one heck of a lot of stuff which they eat and cook with so it's skills for them in life and that is something they make a big thing of there and it's very successful and they are secondary school children.

Facilitator: so is that growing for eating important for their connectedness even?

Keziah: yeah it all follows through for them and a lot of or quite a few of them when I go to a leavers assembly they actually, there's one or two that go into catering because of that erm because of their interest in, in that with food or into agriculture. And there's been one last year that went to Bloomfield college erm, I know it's only the odd one but that one matters and these are special needs children.

Facilitator: and you mentioned that there's quite a lot of art based stuff at the school, is that a route into nature connection in, is that something you think you could use; the artistic side of things?

Keziah: it could well be yes, 'cos they're showing people what, you know if you're out painting or

Don: I was going to say if you see something like that (*points to Monet picture*) they might take the sketch pad and sketch, paint. It could introduce them to it couldn't it?

Facilitator: What about, you do some photography.

Don: ummm (*in agreement*) it's the same thing. You see a good picture like that, you'd want to take it

Facilitator: so what do you think it is about those kind of when you're taking photos or when your drawing something, what is making people A) want to do it and then B) feel more connected and related to the natural world around them?

Don: (2 second pause) it's, you're taking the picture like that because you don't see it every day, it's something different. (2 second pause) and your taking pictures so you can show it to other people to say 'look, I saw this yesterday, not seen one of these before' like you were saying (to Keziah) about your dragonflies

Keziah: Hmmm

Don: you know

Keziah: it's not something you see in your garden every day is it?

Don: no

Facilitator: so your taking notice of it

Keziah: yeah

Facilitator: and that's the way that...

Keziah: your becoming aware of things and also it's the beauty of it. Though if you show, if Don does a photo say of Edale or wherev...'where did you take that?' 'That's at Edale, it's really nice there; perhaps we could have a run out there and take a look?' so it gets people out to visit the places that you see.

Don: yeah

Keziah: and err, nature you know, into the countryside.

Frank: use people's imagination to what's around them

Facilitator: in what way?

Frank: if they're drawing something, and they obviously, errm if you look at something outside, they can maybe put something from what they've seen elsewhere into that picture to make it unique and to make it to their own picture so it can influence their learning on drawing or painting or even photography and trying to put pictures together. So it's obviously learning and they get to become connected to nature by looking and taking note of what's around. So yeah...

Facilitator: and kind of when your, if people are taking notice and are enjoying it, well hopefully they're enjoying looking through what role do you think emotions play in that regard? So maybe kind of joy, how they feel about their purpose, you know, how does it, how might they, what role do the emotions play in them maybe wanting to engage or take photos or paint or draw or just enjoy the view?

Keziah: I think it, it's a very calming experience isn't it if your stressed. In usual life it's very rushed, it's stressful and it can clam you down. And I've found places like that are very peaceful and you can just chill out and lose yourself. And with seeing artwork as well but not as much as, as being actually in the place itself and the same with gardening; that's how I lose myself. Even though it can be hard work, a lot of people don't like it because it is hard work but you, yeah Frank is laughing, errm, but you can actually forget a lot and get out there and then when you see what you've achieved at the end of it then it's great.

Facilitator: do you think it's more important to have, do you think people's thoughts about nature or their emotions about nature play a more important role in how connected they are?

Keziah: sorry, their thoughts or...

Facilitator: so either their thoughts, the things they think about, how they think about nature or is it how they feel that is more important?

Keziah: *(3 second pause)* that's a hard one

Facilitator: are they equally as important?

Keziah: probably equally, it depends how, I don't know, it makes me feel good. Errm but whether, it doesn't always make everybody feel good, it depends how you are yourself to some degree. I mean, Frank, you put him in the garden and say 'do the garden' he'd be frustrated and fed up; it wouldn't do him any, do the same for him

Don: no I was just about to say, we think that's a nice picture, you could show it to somebody and they think 'it's a picture' and that's all they think, that's all they can see of it. They can't see the beauty of the thing

Frank: I think feeling does change your opinion and your thoughts

Don: yeah

Frank: on nature itself 'cos if you do enjoy it and you've got a good feeling about how Keziah does with gardening, obviously, err, then she's more likely to do it again. But whereas me, I'm not that big on it whereas I'm not like going to do it again. So obviously that affects your thought process on it so...*(3 second pause)*

Facilitator: so what we'll do is move onto the next one. errm so what I've got is a couple of sheets and I'll pass them around (*nature based phrases*) and we can have a look, have a read and just tell me what you think. What comes to your mind when you read those?

Don: going to Amanda a fortnight ago (*Keziah and Don laugh*) it absolutely threw it down.

Keziah: they're just, just sayings; they don't actually...that one might do the second one; a bird in the hand is worth two in the bush, well I don't know two in the bush or is it? No I'd say the other way round, better to have two in the bush than one in your hand. Two, errm the wrong way round

Don: I'd rather have an eagle on me, on me hand than just see two in the bush

Keziah: no because that means you've got two in the wild

Don: I know but to have, more of a thrill to have it on your arm

Keziah: no, no, I'd rather see it where it should be

Don: err no, no,

Frank: see busy as a bee is kinda saying, it's kind of saying how busy bees are in day to day life; they spend most of their time working errm and then a bull in a china shop, it's kind of stereotyping animals in a way 'cos not all bulls are just gonna like ruin everything are they? It's the way people affect 'em and the way things affect 'em. So but yeah, no I don't get this one 'an apple a day keeps the doctor away' what does that mean?

Keziah: it means if you eat healthily, healthily, you don't need a doctor

Frank: oh right yeah

Facilitator: so in these examples, of, kind of a expression of communicating through nature so people are bringing nature into their language. So these are maybe not used all the time but certainly busy as a bee maybe or raining cats and dogs; people are using nature in their everyday language.

Keziah: but they wouldn't realise it

Facilitator: yeah, so how do you think, erm nature connectedness then can be increased or developed by actually expressing through kind of nature, not necessarily through sayings but maybe in other ways you can think of.

Frank: every word you say brings a picture in your mind so like if you say an apple, an apple comes into your mind. Raining cats and dogs, you think of a picture of it don't ya, in your mind

Keziah: well I just think of a cartoon one

Frank: yeha that's what I mean, but your still thinking of that animal or aren't ya? When you read a certain thing, what it says

Facilitator: so is the way you both think but also talk about nature important

Frank: hmmm (*in agreement*)

Facilitator: in nature connectedness? How do you think that relates to how connected people are?

Frank: it gets you thinking about nature. So obviously your thinking more, talk about it

Keziah: I just talk about it normally anyway if I've seen something and I just say erm, but what did we say last night? A bat didn't we?

Don: Hmmm (*in agreement*)

Keziah: it's been there the last few nights 'cos I thought there had been a bat flitting in and out of one of the fir trees and flitting round and you thought it was a bird and I said no as they've nested for the night erm there was a definite bat and margo (*a cat*) had seen it didn't she and she was sat on my knee and she sat up and looking round and it was flitting it did several circuits around the houses and then went off looking for food (*1 second pause*) and its been there for the last two nights. But things like that they're great 'cos you don't often see a bat but those things interest me but somebody else would just think oh it's a bat.

Facilitator: so would you, as you appreciate the experience of seeing the bat, would you talk about it differently to somebody who maybe isn't as interested or connected to nature do you think?

Keziah: maybe if I knew they weren't interested at all, prober, I may not even mention it but to Frank I would probably say 'oh I've just seen a bat' and he'd say, being on his playstation 'oh have you?' and I'd say 'right, ok' and walk out but at least I'd tell him. Now with Don, I'd talk to him and tell him and he'd be looking you know but I'd still tell them but in a slightly different way yeah. But if somebody just it was plain they wouldn't be interested then maybe I wouldn't say anything.

Facilitator: well obviously you've all taken part in the task at the beginning of if you were an animal what you would be and you all picked out particular animals but then you spoke about their attributes so there's obviously some kind of interest in that particular animal so does that alter, because of your interest there, is that altering how you speak about it?

Keziah: I would fight for animals, yes, and that is why because Organutans are endangered and in crisis yes I would very much and that's why I adopted two from monkey world and I would fight for, if I could and I had lots of money I would certainly support them much more if I could. Not only them but there are lots of animals I would errm but very dependent, like when we went shopping to ASDA a few weeks ago, they'd got a lot of new deliveries of bedding plants and there was a toad walking near them and a little boy was watching it with his mum and he was doing no harm and he was very interested, he was only about three and I said to him 'can I take that home to my pond to be with my frogs?' and he said 'no' and I said 'well, the thing is there is a lot of boys coming out of the school here and they might tread on it, they might hurt it; do you think I can take it?' and he said 'yes'. So I put it in, Don fetched a bag and we put it in and I said 'are you going to say bab-bye?' and he said bye to it and 'I'll take it and look after it at home' and he was happy with that and we took it home and put it in the water. I cannot stand to see an animal struggling but that, that's me errm and I'd do it. I don't care if I get laughed at I just do it. They were sat on the seat at ASDA and they thought it was hilarious but we took it in the car didn't we (*to Don*) and took it back with the shopping and put it in the garden but that's, that's me. But a lot of people would just left it, it would have died. If it were dry it would've died of dehydration anyway so

Don: I've got a friend and their family they go out frogging, frog watch. Pick the frogs up and put them in the bucket when they cross the road, the majority of them will get run over and they go out each night picking frogs up, taking them to the pond. I mean people they would laugh at them wouldn't they; people think like that don't they to save them. Same like when we're out walking, if you see a buzzard up in the air and err, what do ya

call it, sky ten to one, someone would say to me 'Don, have you got that buzzard?' 'cos we don't see many of them

Keziah: you get a photo don't you?

Don: hmmm (*in agreement*)

Facilitator: and is that, so it that caring for or taking an interest...

Don: people are interested

Facilitator: that's the connection

Don: yeah, interest.

Keziah: well the more people that know about things, the better it is isn't it? To know what's out there

Facilitator: so just in the way people talk about it, doe that make maybe particular places special or..

Don: well if your see something special you remember that place won't you now?

Keziah: Hmmm (*in agreement*) well certainly in the peak district in Derbyshire erm I think if you go out and take photos there they've been quite dramatic haven't they?

Don: if you take a good photograph of something you'll always remember; you'll look it up in your book and think I remember that and you'll remember what youse was doing that day, it'll bring it all back to you

Facilitator: so what we'll do is move on to the third kind of erm area. This one's a bit more different

Keziah: what have you got a frog?

Facilitator: no it's not a frog, it's my poor bean plant; it's not doing very well

Don: laughs

Facilitator: it used to be amazing, very bushy

Keziah: what sort of bean?

Facilitator: I don't know

Frank: it's chilli isn't it? It's not chilli?

Facilitator: no it's not, it's just the pot. So what do you think when you see that?

Keziah: I think it needs some help (*jokingly*) (*Don & Keziah laugh*) ermm,

Don: it's strong isn't it? And it's a good colour and I think it wants re-potting

Keziah: and it needs supporting

Don: and a bit better, bit better support! It's not wilting is it? It's just its weights taking it over that's all.

Keziah: I just don't know what sort of bean it is. It's not a runner bean, is it a broad bean?

Don: no it's not

Kaziah: it's not a broad bean is it

Don: not broad bean, not a runner bean,

Keziah: well it's something growing and it's something encouraging let's put it that way

Don: but we don't know what it is

Keziah: I don't think you'll have a big crop off it

Facilitator: what do you think Frank?

Frank: erm (*others laugh*) it's obviously growing err, things like that don't really appear to me

Don: it's not the pepper is it?

Facilitator: no

Don: it's just in that pot

Frank: if it had flowers obviously it's brighter, it looks nicer whereas that's just one green and it's, looks quite boring

Keziah: yeah but it's going to produce something and that's the thing

Frank: I know yeah but you see what I mean

Facilitator: it's interesting that when I brought it out, some of you touched the plant, so it's all about contact with nature. So how can nature connectedness be developed by having contact with nature? You've touched a little bit on it before but I'd definitely like to hear more

Keziah: well you can buy a lot of fragrant plants so you can have really nice smelling corner of a garden, fragrant ones like lavenders and herbs and things like that and also erm,

Don: herbs

Keziah: and sort of erm, different leaves; furry leaves, spikey leaves 'cos they do have sensual gardens for sight impaired people erm they're good.

Facilitator: but the smells and the actual touch are important?

Keziah: yeah, yeah, erm, and colours as well I mean I, I, tend to like different coloured leaves and sorts of flowers. Flowers I think are so short lived and you lose them and you've just got the basic plant left so I like them with varying coloured leaves which can at a distance, look like flowers if you like so you've got the very pale leaves and then you've got the reds, the oranges so at a distance it can look like flowers. And I like a natural looking garden, I don't like a formal

Facilitator: so what's the difference?

Keziah: a natural one is more as it would grow in nature if you like and not red, blue, yellow

Don: a few more leaves

Keziah: planted, you know, little bedding plants; I don't like formal gardens. I don't like them at all as it's not how nature would do it. Nature would do clumps of things and spread naturally

Don: you draw your hand through (*does so with the bean plant*) like that in a mass of mint and then smell it; beautiful smell. But if you don't do that, you wouldn't get the smell would you? If you just looked at it, you wouldn't get the smell so you've got to touch it to get the smell

Facilitator: so that contact is key to your connectedness

Don: hmmm (*in agreement*) and that's with a lot of flowers int it?

Keziah: hmmm (*in agreement*) and you do that every night at mine don't ya?

Don: hmmm (*in agreement*) yeah (*laughs*)

Facilitator: so expanding it to any contact with nature, how can that be used to connect people to the natural environment

Keziah: well, stroking an animal; that is calming (as long as it doesn't bite you) erm but anything to do with...and close up, being close up to a wild animal is pretty, you know, full on. Errm, seeing them in detail 'cos you see them on television or you see them at a distance and it's nothing like seeing something close up or watching them.

Frank: it's animals that are soft int it

Keziah: yeah

Frank: you won't want to touch animals that are rough

Keziah: I mean yeah, I've picked up a hedgehog and the spines, how prickly they are

Frank: you don't really want to touch them again do ya? If there like a goat, their quite rough fur

Keziah: yeah well this is just it, I've touched a goat, you know different types of fur and sheep all wool

Frank: but if you had a choice would you go for a goat that rough

Keziah: no

Frank: or a cat that had soft fur

Keziah: yeah but I'm saying it's a different feel

Frank: yeah

Keziah: and it's, I say they're very different when they're up close and and pick it like the seeds that you find in woods and things, you pick up all sorts of stuff.

Facilitator: So what's so important about seeds and all that kind of stuff, stroking a pet, how can that make you more connected?

Keziah: it just brings you closer to nature doesn't it? It actually, you can see things but that's an entirely different thing to actually touching something. You've actually got, you're using another sense aren't you; not just your eyes. You, it's, it's a tactile thing isn't it? (*2 second pause*) it's like anything, when you go shopping, most people won't look at a dress or a whatever, erm, they have to touch it and it's the same with nature; you automatically want to touch.

Facilitator: and is there a, with seeds as well, is there a nurturing aspect; does that bring you closer? Or is that irrelevant and it's about just having the contact?

Don: well it's an achievement isn't it to set a seed and watch it grow, put it into the garden; it's an achievement.

Keziah: well it is yeah, erm, I don't know about nurturing so much on the plant side. Certainly with animals yes but not perhaps so much with plants. There is on growing plants, they're not out in the countryside but if you're growing them for your own garden then yes, you want to see a result.

Facilitator: so how does it work with animals then in regards to nurturing them and stuff?

Keziah: oh well you look after them and because they need it don't they? 'cos I think humans are the worst thing on this planet for animals. We are the main enemy aren't we at the end of the day. We've done a *lot* of damage. Errm, we've taken over and pushed them out of their habitats, errm, too many people and too many houses and they've been pushed out of where they should be. So they've had a tough time so I think any help that they get from us is errm, is needed. No I think it's different with animals entirely. Your garden is your own personal pleasure in a way and you want to do the best with that so yeah it is a nurturing thing with your own garden.

Facilitator: what kind of errm, looking at it from errm a social aspect. So kind of having activities with others at certain places, how can being with others together on an activity, how can that help make you more connected to nature? For example, Don you organise walking groups don't you (*Don nods in agreement*) is it the activity or is it the nature connectedness enhanced by taking part with other people

Don: no it's getting other people together to go with you and spreading it around so it's not just you doing it, you're bringing other people into what you doing and what you like and hopefully you can get a new person come and they'll come again 'cos they've enjoyed it. That's half the battle isn't it; getting people to enjoy it.

Facilitator: so how do you do that?

Don: by taking them out to the countryside and getting them to look at things they haven't seen before and hoping that 'cos they've seen it now they'll want to see it again. Like the kids with the errm, animals they've not seen before. They want to go again to see them again and that's true that is. Not so much me, I used to do the seniors but the wife used to do the juniors and they used to ask her 'when are we gonna see the animals again? When

are we gonna see the sheep and the cattle?’ ‘cos as I say, these youngsters they’ve never seen the, I don’t know what it’s like today ‘cos I don’t

Keziah: well in towns they don’t to

Don: children who live in towns, they never go out into the countryside do they? A lot of them don’t.

Facilitator: so what important factors could you put into place or would be important to get them to take part to go out and explore nature

Don: like you say they like to go and feel them and touch them, the different furs and the different food they eat ‘cos they don’t know.

Frank: if you look at places like Canada where there’s a mass range of nature, there’s animals that you won’t see here or erm, or in other countries that are wild erm so there’s a lot more tourist attraction there whereas here there’s not really that many animals that you rarely see anywhere else. It’s more about the sights like Big Ben and all them that are just unique. But in countries like America is such a big country, it’s still a mass of land and nature a lot of people appreciate it like the big redwood trees ‘cos they’re unique.

When things are unique that you’ve not really seen before

Facilitator: can you think of any experiences of your own where you’ve gone and taken part in an activity or just had some contact with nature that you remember and think yeah that was something positive for me?

Frank: when I was, what, how old was I when I went to America? When I was in year 4 want it?

Keziah: yeah, you were, you went to the grand canyon

Frank: so I was 8 and things like that there were big red trees that were like how tall, a good 20 ft one

Keziah: no they're about 50/60ft; they're massive the giant redwoods

Frank: but they were massive and you remember them 'cos compared to here they're 20 times the size and it's things like that. Like you saw like grizzly bears

Keziah: and the ant that bit you

Frank: yeah (*laughs*) it's just America's animals are a lot bigger and like the ants are a lot bigger than here, the birds are a lot bigger than here and it's just a new experience

Keziah: but the ant bit you, was it your ear?

Frank: yeah

Keziah: and it wouldn't let go would it? And you had to pull it off and it's head stayed on your ear and you had to prize it off, it was massive.

Facilitator: so how do you think, in what way did those kind of experiences make you more connected to nature?

Frank: just seeing something new and it's obviously I was little then so it's more exciting then 'cos your little and it's a lot new. Whereas now, errm, I would go but I wouldn't be as excited

Facilitator: is that because of your age or

Frank: yeah I think so it's the age

Don: I dunno, it's still exciting. When I went to Vancouver a couple of years ago,.

Frank: yeah you are but your more excited when your younger.

Don: bears at the side of the road and seeing Elks were right up at the top and we thought they were sheep but according to the courier they weren't sheep, they were mountain goats. But the majority said, well we all said they were sheep right up at the top but they're not they're mountain goats. And as we climbed up the mountain as you got nearer you could see they were goats but we all thought they were sheep. You see, you remember these things.

Frank: see I've never been to Canada so I, things like that where I've never been but when I went to America I enjoyed going but I wouldn't be as excited as when I was little because I just think when your little you, 'cos it's something new and everything is a lot bigger so it's more exciting for ya as well so that's what I think anyway.

Keziah: I don't know, I wouldn't mind it

Frank: yeah but you absolutely love nature, your big on nature whereas I'm not so

Keziah: but a lot of things here you've not seen. You've not seen the Scottish wildcat or pine martins or red squirrel

Frank: no I haven't seen that. See I wouldn't go out especially to see them

Facilitator: if you did see them when you were out and about would you notice them?

Frank: I would notice them yeah but I wouldn't...I'd be glad I'd seen it and it's something new but I wouldn't especially go out and see them errm just to see that sort of thing.

Facilitator: so what stops or makes you not want to see that; is there something that's a barrier to that?

Frank: I think 'cos of the likelihood of seeing things, especially if they are rare you get bored quite easily. Things like fishing I'd get bored so quick I would, I wouldn't want to do it erm whereas some people can just relax and fish for ages

Facilitator: what do you think is it that makes it relaxing and enjoyable for them?

Frank: time to themselves, erm, (*2 second pause*) be away from the life around them maybe they've got stress at work so it's something calming out in the wild

Keziah: it could also be that your very active person and you like a lot of sport and I'd sit for hours and wait for something like these camera men have to on all these programmes. I'd sit there quite happily and wait. But you wouldn't, you wouldn't have any patience to do that.

Facilitator: so what kind of activity in nature do you think would you enjoy more then?

Frank: climbing, things like that on rock faces erm

Facilitator: and what would you enjoy about that experience that would make you feel more connected to nature?

Frank: something new it's, erm it gets your mind you know you won't be bored because your always concentrating on something as your always moving whereas I couldn't sit and just watch for ages 'cos I'd get bored so I'd have to be doing something erm and I learn by being physically active so things like that like zip wiring through trees, climbing trees is quite good stuff like that

Facilitator: so that's a form of contact with nature but just in a different way. Do you think that, kind of, more important to be with others whilst you're having contact with nature to get the most out of your connection?

Frank: yeah 'cos your socialising with other people, new subjects, having a laugh with other people just doing stupid things, laughing about accidents, things like that if you're by yourself there's no one to compete with as well 'cos a lot of people like competing; I like competing. Errm, if there's no one to compete with you might do 10 minutes and give up 'cos your bored whereas with someone else they might keep doing it as well. Things like that.

Don: and it also brings conversation don't it with somebody else. When you say 'oh look at that' you start the conversation each way like when I went to Canada again, we saw some trees what I've used at work, some long length of timber we used to use Hemlock. I've never seen a Hemlock tree but this errm guide said those, there's a Hemlock and they're two hundred foot high, 250ft high, great big massive things. I've used them but never seen them, only in lengths of timber plained up so that was something interesting. The chap who was with me, he, he's saying he's used them but we've never seen the tree 'cos they don't grow in this country.

Facilitator: and did that make a big difference to you?

Don: Yeah, just looka, just look at that it's brilliant I didn't think they'd be as big as those (*1 second pause*) like I say it brings things to you that you could use every day but you don't think where it'd come from, how'd you get it?

Facilitator: so is that the important factor as well then?

Don of course it is yeah I think so. You've used something but you don't know where it's come from.

Facilitator: and obviously we've spoken about kids knowing where food comes from so is it the same?

Don: yeah they'll eat a piece of beef (*laughs*) and won't have a clue where it's come from!

Keziah: yeah ASDA (*Don laughs*) well yeah that's it, that's the way they see it

Don: yeah that's right

Facilitator: so it's important to have people grow their own or to at least be appreciative or in touch with...

Don: my mates favourite saying is his daughter in law thinks potatoes come all nice and cleaned and washed in a, in a polythene bag. He says (*laughing*) she doesn't think they come out of the ground all dirty an horrible and need to be washed; he's always saying that.

Frank: the more people that are aware of where it comes from, the more respect people will have for like the people who do the first thing like farmers 'cos not many people really respect them but having to think of them when they buy food 'cos the store they buy it from *they* make the most money. So it is that farmers have a rough deal with it all with a lot of the crops get ruined, animals dying from diseases and stuff like that so it is the more you're aware, the more respect and the more likely the farmers are going to get more money and be able to keep it going the more people are going to go into farming. So it is important 'cos if we lost farming we wouldn't know where food come from.

Facilitator: ok so, we're coming towards the end of it now, so just to give you an opportunity just to sum up how you think nature connectedness can be achieved from just your own thoughts; a couple of sentences that kind of thing for you personally. (5 *second pause*)

Keziah: for me its erm, being able to get out there with it being in the garden or in the countryside and being with animals and it doesn't bother me if I have anybody with me or not, in fact it's quite nice to be on my own out there 'cos I'm at peace with nature anyway whatever it is erm and I think we get so much out from it so it's self-fulfilling anyway.

Don: and you've got to work with nature, you've got to help it along just can't take it for granted that it'd be there this time next year; you've got to work with it and help it. (2 *second pause*) like this little thing here (*touches the bean plant*) he needs a bit of help (*chuckles*)

Frank: it's people putting effort into making finding new places where people haven't been before and setting up activities/tasks things like that like Don does walks whereas someone who went to the same walk route might get bored quite easily but if someone picks somewhere new to go to visit occasionally then people are more likely to go to and keep on wanting to go to 'cos obviously nature is always changing, the climate is always changing things like that; it's new experiences is all.

Don: I admit, I have one or two people who'll do a canal walk. They'll do them but it's not very interesting for them; they'd rather be up and down the hills like you say up a rock face is better than walking round the bottom of it and getting over the top; it's different and you've achieved something by tackling it. Everybody's different, lots of people can't do a heavy walk they can just do a flat walk and they get just as much

enjoyment out of a flat walk as we would walking up and down over the hills and the valleys so everybody's different aren't they?

Frank: I think people setting goals for themselves and aims is the most important thing 'cos if someone hasn't a goal to say to do the walk it's not like they'll want to do it but if they have one, maybe to find a certain animal so they'll be more likely to keep at it and they're really gonna try hard and keep at it or something like that so...

Facilitator: awesome, well we've come to our time now so thank you very much. I hope you enjoyed it; having a chat. It was very interesting stuff you have said so it's been great to have you here.

Appendix 4.8 Focus Group Three Schedule

1. Explore how the nine values of the Biophilia hypothesis relate to nature connectedness.
2. To investigate the factors involved in developing a connectedness to nature.

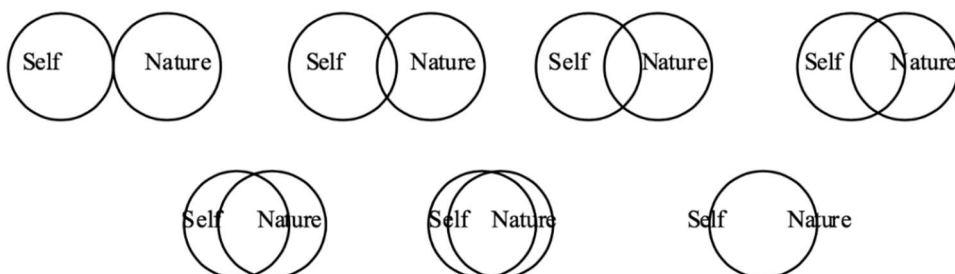
Value	Definition	F.G. Term	Key Words
Humanistic	Strong affection, emotional attachment, “love” for nature	Attachment to nature	Group bonding, sharing, co-operation, companionship
Eco-Scientific	Systematic study of structure, function, and relationship in nature	Study of nature	Knowledge, understanding, observational skills
Moralistic	Strong affinity, spiritual reverence, ethical concern for nature	Conduct toward nature	Order and meaning in life, kinship and affiliational ties

Begin by ensuring the Connectedness to Nature Scale has been completed (if not, administer the scale) followed by introductions by the group members, giving their name and if they were an animal, what would they be.

Q. What do you think NC is? **Create a ‘mind map’ that all the members can contribute to.**

Present the Inclusion of Nature in Self scale for members to complete and ask the participants to speak about their initial thoughts/feelings.

Please circle the picture below which best describes your relationship with the natural environment. How interconnected are you with nature [right now – state]?



Q. How can nature connectedness be increased by becoming attached to nature?

Beliefs/Attitude:

Memories, happiness, safe/comforting, unique, meaning, special places

Social Factors:

Unique, together, sacred, local, once in a lifetime, one with nature

Affect:

Animals, love, longing, need, one and the same, together, attachment, special places

Present the classification charts and ask the participants to speak about their initial thoughts/feelings.

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Q. How can nature connectedness be developed through studying nature?

Prompts:

Beliefs/Attitude:

Investigate, knowledge, understanding, linked, web of life

Social Factors:

Meaningful, documentaries, encounters, inspiration; historical influences, influential moments

Affect:

Purpose, interest, life, meaning, joy, love for species

Present the animal charity logo's and ask the participants to speak about their initial thoughts/feelings.

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Q. How can your conduct toward nature develop nature connectedness?

Prompts:

Beliefs/Attitude:

Purpose, duty, affinity for, justice, balance, care for, responsibility

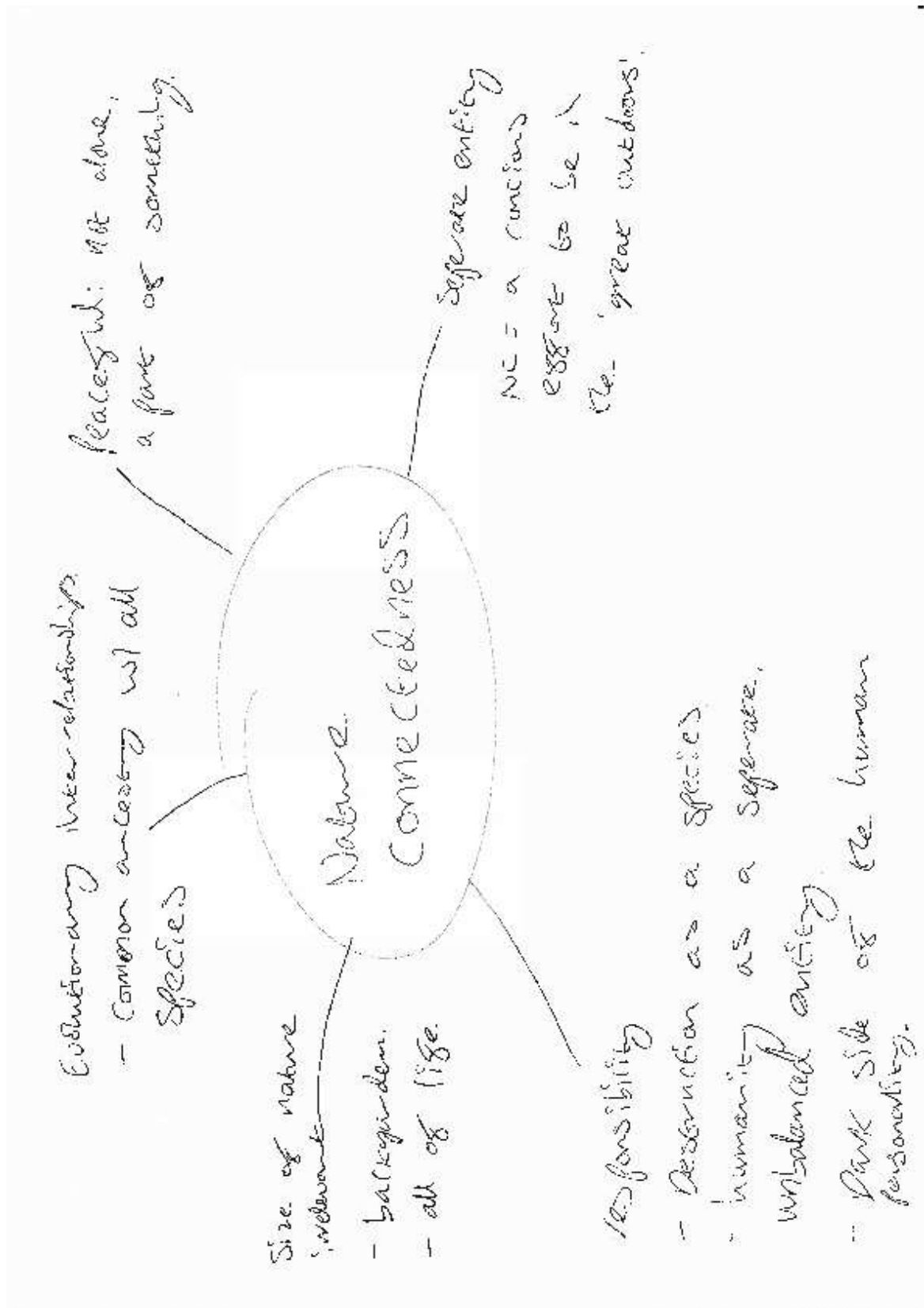
Social Factors:

Activist, doing what is right, respect, connected, future, care, justice

Affect:

Moved, help, purpose, shared experience, bond, protect, save

Appendix 4.9 Focus Group Three Mind Map



Appendix 4.10 Focus Group Three Transcript

Facilitator: Well thank you all for coming, it's a real big help for me and hopefully it should be very interesting for you as well. So my name's Ryan, I'm a researcher here at Derby uni and I'm doing a PhD looking at nature connectedness and actually how people can increase their connectedness to nature. What I'm gonna start off with to break the ice so you guys can get to know each other a little bit. As we're looking at nature, I'd like you to go around the room and say if you were an animal, what animal you would be and why but also give a little brief description of yourself as well. Mr. Skaba, would you like to go first?

Mr. Skaba: Yeah, I'll shoot. My name's Mr. Skaba, I'm Also studying here at Derby, doing a PhD if I could be an animal, what would I be?...I'd be some kind of bird just so I could *fly (laughs)* there we go

Scarlet: Right, I'm Scarlet, retired, belong to the Friends of Markeaton Park group which is way that you contacted me, and I think if I was a do...if I was an animal I would be a dog that lived with me (*all laugh*) because my dogs are spoilt rotten!

Ragnar: Hi, my name is Ragnar, I'm a PhD student here at the University of Derby in Zoology. I guess if I was to be an animal I would like to be a dragon fly. I find them so graceful and powerful as it is and they also have dual existence in that they spend the first half of their life living under water and then they emerge and take to the skies so they get to see the best of both worlds as it were and you get to see two very different ways of living but they're the masters of both domains as well as powerful predators in water and in the air.

Facilitator: Thank you very much. Well you've all filled out a scale at the very start which is how psychologists conceptualise the idea of nature connectedness but what I'm really keen to look at is what nature connectedness means to you. So we're going to make a little mind-map with just your thoughts and ideas as to what you think nature connectedness is, so when I say that word, what kind of comes into your mind?

Scarlet: Well I'd say peaceful.

Facilitator: Why peaceful?

Scarlet: Yeah why peaceful (*to herself*)

Facilitator: It's a good word

Scarlet: Because you do, well personally, I do feel, if you like not alone. And that you are a part of something

Mr. Skaba: I think when I think about it as a separate entity because you're so busy with your working life so if someone says about nature connectedness would be a concerted conscious effort to go I'm gonna do something that doesn't involve buildings or cars...

Ragnar: and getting into the great outdoors sort of thing

Mr. Skaba: Yeah I think that's what you associate it with so for me I think it would be, quite crass I suppose, camping (*murmurs of agreement*) so it seems very separate to me as I don't feel very connected to nature right now

Ragnar: No (*in agreement*)

Mr. Skaba: In a chair with a coffee so the kind of different, I suppose I conceptualise it differently into separate things.

Ragnar: The term nature connectedness when you say it, we've all had different ideas of what it means being part of nature. But I think nature connectedness strangely again I think it's my background, I think of evolutionary inter-relationships like the common ancestral theory, when I see other people or when I see them interacting I see them in terms of, you know, group behaviours. When I'm out walking my dogs and see them running I think 'they've all got the same bones as we have, they're from a common ancestral origin' I see nature connectedness in that way of whenever you're outside you can see all these different organisms working together as one eco-system. That's what I think of so again it's just a different

Scarlet: Yeah I think that's interesting

Facilitator: any other thoughts, any other ideas?

Scarlet: I don't know how to put this into one sort of one word for that but it's like the size; people think, like you've just said going out camping is nature but to me it's my back garden as well so it's like the size of it, it doesn't have to be a big open spaces, it can be a smaller...

Ragnar: it's any way you see life really

Scarlet: Yeah...

Facilitator: Anything else?

Scarlet: Responsibility.

Facilitator: Yeah, in what way responsibility?

Scarlet: Well, you know, you can see how we do destroy, not just here in England but in your own park or worldwide, you can see how as a species we can destroy and I think we should have to face the responsibility of that

Ragnar: Yeah, I agree totally, in fact I find it very easy to think of myself as sort of a separate entity from, or humans as a separate entity from the world 'cos we're not exactly in equilibrium are we? There's no balance to what we do, we just kind of keep going and...

Mr. Skaba: Yeah there's no natural balance

Ragnar: No, there's no selective pressure to remove humanity compared to other life forms so I think that in many ways, if I'm having a particularly bad day, I do end up thinking quite darkly about what we are as I think again that has helped guide me towards insects as an area of study as they're so well governing that they keep themselves in order. So yeah, nature connectedness is not something I think humans do so well as a species as we tear things up.

Facilitator: That's good, any other kind of thoughts? Thank you, that's really good. So this is what nature connection means to you guys. There's definitely an overlap with the psychological aspect as it stands at the moment but I'm sure there's probably room for it to broaden out. So what I'm really keen to look at is the types of factors that are important to people actually becoming connected to nature so having that peacefulness, having that responsibility, education through science, that sort of thing. So what I'll do, I've got a series of prompts that I'll present to you, initially just throw out any thoughts or impressions when you actually look at it and then one of them will be a little, very short scale where you just match up some circles so just indicate which one you feel relates to

you and the other ones you can just discuss what you think about them. So let's get the first one out. So this first one, again this is another way psychologists look at nature but a little bit differently. It's called the inclusion of nature scale and what it looks like is how you see yourself in relation to nature just in some overlapping circles. So have a go and see which one you think applies to you and what you think to it in general really. So what are your initial thoughts, impressions of it?

Scarlet: to me that's difficult (*other murmurs of agreement*)

Facilitator: In what way? Can you elaborate?

Scarlet: Because it sounds, I suppose this is my humanness coming out, part of it sounds big headed to say that you're perfectly in balance with nature to say that we are one and the same but at the same time I know we are not one and the same but that's how I'd like to feel that I am so in a way it's, it can be seen as a bit of a... fib (*laughs*)

Facilitator: and do you think that that happens often with people and how they perceive their life with nature to be?

Scarlet: No I think some people definitely don't grasp the importance of the bond if you like of being with nature you know, I mean I've got an uncle who he loves walking, absolutely loves walking but he cannot see the point in walking across a field; it's always street walking, 'what do you want to go out there for?'

Facilitator: That's very interesting

Scarlet: Yeah you know, again, it's very different people's ideas I mean maybe he sees more of the nature in walking the streets for all I know you know but you do get this odd response sometimes when you go down and take the dog along the park and you probably

see a bird that you only see occasionally and your with someone else and you mention 'ooh, it's a nuthatch' 'oh yeah' (*not bothered*)

Ragnar: I know people like that

Scarlet: and you know, and I think god, I'd been thrilled to if, 'cos this person is probably 20 years younger than me and I waited another 15 years until I saw one of those, you know (*chuckles*) so that type of, there's some people who just don't seem to get it

Facilitator: But you indicated that you feel quite

Scarlet: yeah, I feel that not that I'm on any particular environmental high horse and that but I know that I would if you like feel that half of me was missing if there was no nature you know, and I definitely feel that I'm one of those people that need it.

Facilitator: how do others feel about the, that idea of...

Mr. Skaba: It's quite interesting actually, as I've never really thought about it in that context in that way so when somebody puts that in front of you and you've never seen it before it actually, hmmm, where do I put myself? See I usually sort of see myself as incidental as I suppose as nature is there and you're just sort of part of it as a spoke on a wheel...

Ragnar: born as part of a system

Mr. Skaba: yeah, exactly, so I don't in terms of my, I don't know, I see it as a relationship of there's me and there's nature and you just think you're an offshoot of it; you're just incidental sort of outcome of that entire process. So in terms of a relationship, I don't know if I sort of see it like that; I sort of put myself as nature and then me in it somewhere, just floating around. So yeah I don't just see it as sort of two things. It's

interesting what you say about going for walks and a lot of people sort of feeling oblivious to it if you like

Scarlet: Yeah

Mr. Skaba: I don't know if that's just me being cynical or something or just something like that but there is a constant drive to sort of perfect living, perfect inside, make everything better, less reason to go outside. Like you hear sort of anecdotal evidence for people saying all the time 'kids don't go out and play anymore' you know, so running round playing footie and making goals out of coats and things like that and you use less of that now because of computer games and this all just anecdotal stuff but it kind of relates back to what you were saying about this sort of lack of appreciation. I don't know that it is a lack of appreciation, a conscious lack of appreciation but sort of an obliviousness to just like...

Scarlet: yes, yes, it is more of that, it is a better word because like I say the people that I am with when these sort of things happen, they're out for the purpose of walking their dog. I take my dog out to go and enjoy that but theirs is just a duty

Ragnar: I'm with you on that

Mr. Skaba: It's another job listed on the fridge

Scarlet: the dog needs walking , yeah

Ragnar: The fact that I have to take my dogs out means I can go to the park, I end up looking at the spread of different species of trees, you know what different birds are out and about, what berries are showing (*Scarlet verbally agreeing*) I can actually see the world and the interactions with nature in front of me whereas other people are throwing

the ball for the dog so they can get away from the park as the dog had done what it needs to do and go back and watch Eastenders . If I'm there I want to enjoy it as it's not going to be like that tomorrow, you know it changes every-day, that's part of the system we live in, again it depends really on what you take great joy in. Just going back to what you said before, I have some friends who couldn't give a damn about nature. I've got a friend who works for the railways and he told me that one of their big tunnel refurbishments had to be cancelled because of a population of bats down near Oxford and I was thrilled at, what kind of bat? and he was furious and chuntering away, you know to, he couldn't give a damn, I was telling him how important it was and he literally said 'Ragnar, I don't care' and I thought how are we friends?! To be honest, this is a rare species that we're unceremoniously trying to kick out of its, what is its ecosystem to be honest as it's been around a lot longer...

Mr. Skaba: I suppose it's, just to play devil's advocate, that kind of goes back to what you were saying about the ecosystem and where you see yourself and sort of humans perfecting the environment, sort of training it and honing it to fit their needs and let's just dig a tunnel straight through and...

Ragnar: I agree, I see it as there's the world and we're sort of in it but we're not necessarily part and parcel of the, we're not part of the food web anymore but as I put it in my Venn diagram, there's still a chunk of me as part of nature as I have an impact on the world, whether it's carbon emissions or the fact that I live in a house, things like that you know I do make an impact that eventually I will become part of the system and compost but you know, in the meantime I can, I think humans are in a unique position that we can interact with the world, we can improve it but we can also destroy it. That's one of the things that humans do; we can make world changing decisions and that's in a way why

we're separate from the world but also really, really deep in it as well you know, we can't really extract ourselves fully and we can't help but affect it so...it's messy.

Facilitator: well, that is a measure that looks at almost attached to nature you are and how much you include it within yourself and your identity so how can somebody's nature connectedness, how can that be increased by being attached to nature, maybe emotionally or it could be physical even; a physical attachment that they have, how do you think that could be achieved?

Scarlet: somebody that hasn't got any interest to start with you mean?

Facilitator: Hmm, or maybe even from your own personal perspective maybe can you see a moment where or an experience that you might have had where you became or felt a bit more closer to nature in something that you did.

Scarlet: no not personally 'cos I've always been, I've always enjoyed it. I think if it's somebody that's apparently not interested at all it's, you'd just have to work through or present to them different things. Because there is usually something that grabs somebody be it insects, fungi, the bigger mammals, you know and try and encourage them to look further afield to the interdependency and so on from everything or even go simpler still and it be their garden. Because again I don't think people look at that as being nature.

That's a trip to the garden centre, buy a plant and pop it in, well bugger me, the slugs have ate it! But you know you can then say well, why did the slugs eat it? Why have you got slugs in your garden? But if you keep putting these picnics in front of them, they'll keep coming.

Mr. Skaba: I think the pace of life is a huge factor, I think that's really what things come down to. I think people are so busy in their lives, managing their lives I don't, I don't

necessarily think people are conscientiously disconnected to nature, I just don't, I think time is a huge factor in terms of where people find the time to fit things in. so I think things just, we lose focus with things, we're so busy with your life; we've got to do this and pick this up and go shopping and do that, go there and do this report and all the rest of it, the pace of life is ever present and it can be difficult to put a stop to that 'cos even when you are sort of on a break from work or anything like that, usually you've got plans

Scarlet: You've got to catch up with everything

Mr. Skaba: yeah you've got plans and unless those plans involve any conscientious connection to nature then you're just doing other things so I think time is a factor in there (*agreement from Scarlet*) going back to the original question to getting people sort of connected, the first thing that sprung to my mind was the emotional level. You see adverts all the time like for world wildlife fund, animals in poverty but it's always when things have reached a point where it's

Scarlet: Crisis

Mr. Skaba: yeah so it's, it's a, that's the plan you know, where tigers are dying out and all these animals are needing help it seems to be the angle that everyone seems to be going for, trying to facilitate some sort of connection

Scarlet: So really you're saying that the connection comes from money

Mr. Skaba: I don't know...

Scarlet: because that's what usually these adverts are asking you for

Mr. Skaba: well what I'm saying is the connection comes from an emotional point; basically just making people feel bad about the situation

Scarlet: Yeah but don't you think as well that the emotion is the monetary

Mr. Skaba: Oh yeah that's the goal...

Scarlet: 'My money could help...'

Mr. Skaba: absolutely, you're first hit by the kind of like 'oh, you know...'

Scarlet: 'Poor thing...'

Mr. Skaba: Absolutely! And then you want to give money and give your £3 a month or your £10 a month and then you sort of get that 'oh I'm helping the world'

Ragnar: You're getting that gratification from putting your hand in your pocket and that's your input done, you can feel good about yourself

Mr. Skaba: But it's minimal effort for maximum gain which is essentially what most people are all about, you know, on a fundamental level. So...I dunno, I just thought that the kind of angle that the emotive connection

Facilitator: So how could you rework that into something a bit more better then, that isn't just after their money aspect; is there a way you could get people

Ragnar: I think education is the key and starting young is the other thing as people who maintain a relationship with nature in adult life are one's who started early on. It's very hard to take like people who have heard of inner city kids who've never been outside, well never seen a cow (*agreement from Scarlet*) they don't know that sheep or cows

provide our food and their not really bothered. Whereas, I mean, you were saying all your life you've been getting your hands dirty, as a kid, I was always outside collecting bugs and, you know, bringing snails in, centipedes, anything and that's what I was always interested in and now, again I'm in a bit of a unique position as I lecture on it, I study it, you know, it's my hobby, it's my interest so I can, I've been able to continue that but to take somebody who didn't do all of that sort of thing as a kid and get them interested in it, again, it takes education and it takes instilling an appreciation in them (*agreement from Scarlet*). I've done it with a few students who came in thinking 'I've always, I only wanted to do Biology so that I can study leopards'; well we don't have many leopards around but we do have multitudes of insect species and again, when you start highlighting how big and, you know, how complicated this web of life is so that the insects keep going, a lot of them have gone on to do independent studies on insects coming from an area where they only wanted big cats ; they wanted to stroke kittens. Again it took that sitting them down and making them see just what the world is to get them to notice it.

Mr. Skaba: I suppose that comes back to what I was saying though about people think of wildlife, because of those kind of adverts (*agreement from Ragnar*), people think tigers, polar bears, snow leopards

Ragnar: it'd ccharismatic macro fauna, that's what we call it. Everybody loves a panda. People will raise millions and millions of pounds (*agreement from Mr. Skaba*) for the panda; pandas are stupid ; pandas are pointless *but* they raise a lot of money because people think they're cute. Of that money, 90% won't go to pandas but it'll go to keeping an orchid alive that we can actually get anti-cancer drugs from. We don't tell the public that we just say 'give to the panda' and it's a, it works and they feel better helping pandas have babies but they deserve to die out to be honest from a natural point of view

Mr. Skaba: if it wasn't for humans they would have

Ragnar: well they're on the way out; you can leave them in a pristine environment and they just don't get mating; they're a pointless animal

Mr. Skaba: they just don't care

Ragnar: No they don't, that's what you get for eating grass when you're not supposed to...

Facilitator: you've all mentioned, it's interesting that you've all mentioned the whole cuteness aspect as well 'cos you've all got pets. I mean you've got dogs and you've got a cat is that right Mr. Skaba? Are they a route into someone becoming connected to nature or is it an expression maybe?

Scarlet: it probably is but I think a lot of people will say that they're not connected to nature but have got a pet. But a pet isn't classed as nature in somehow or another, it's on a different plane in a lot of people's minds

Ragnar: it's companionship

Mr. Skaba: yeah, I have a cat but I wouldn't say it's a connection

Scarlet: connecting you to nature

Mr. Skaba: no because I think cats and dogs are just like, they become like family members; you become very attached...

Scarlet: they're an extension of our selves aren't they?

Mr. Skaba: and they're part of the household and because they're part of the household, they're not part of nature, they're part of the household but that's just my opinion.

Ragnar: I can see that, I can, again, they're outside of natural order, they exist in our little sphere

Mr. Skaba: they eat food out of the cupboard like I do

Ragnar: they do yeah. If I let ours go, one might catch himself the odd mouse, the other one would just sit there and wait to be fed

Mr. Skaba: yeah exactly

Ragnar: that's it they're useless, they're not real animals in quotation marks anymore

Mr. Skaba: they're not survivors

Ragnar: no they're not anymore. Domesticated cats I think retain a lot of their wild streak, depending on how much of a prey drive they've got so if you've got an outdoor cat I bet they often bring back birds or mice and things like that 'cos they've retained a bit of it as they still get to do some of the roaming whereas dogs have been bred and bred on particular lines for so long they've lost a lot of that feral nature by necessity through breeding of particular lines. Look at a pug-apparently that's close to being a wolf ; *it's really not*, we've got a pug and he's useless, he's an absolute mess (*all laugh*) but that's apparently only a few genes away from being a wolf. But you know, you selectively breed and that's what you get so it's still nature I guess but we've totally removed from its original place

Facilitator: so it's the same way for humans then in that regard as well I suppose?

Ragnar: yeah I think

Scarlet: Yeah there's not many of us that could live in a cave anymore

Ragnar: and look at the selective pressures we've removed from humans. We have medicines now and people are born with terrible allergies and asthmas and things like that would be selected against; they would die at birth, we can keep them alive and they breed and they pass on those genes. It means that we've got a much wider gene pool than we would necessarily have with a lot more faults but we can do that now but does that mean we're not really part of nature which is why we have a massive impact on nature but we're not really at nature's mercy all that often. Something can like the whole act of god thing could break us but...

Scarlet: I think as well, going back to yours on education, when I was at school many moons ago, we went onto the school playing fields and played games, football or whatever but we didn't have people coming into school to tell us all these things you know, different variety of species, the children do get now the wildlife trust going into schools, ornithologists will go into schools and things and I think that's *good* because there are some children that aren't getting taken out so that is the only time that they see these things. To me I find it incredible that a child's never pond dipped, you know, they get to twelve/thirteen and they've never pond dipped so I think god, how, you know, there's nothing better than getting your wellies full of water and finding that there's a snail in the bottom of it or something, you know it's and I find it phenomenal that they've not done it.

Mr. Skaba: don't you think that that's a result of a wider sort of societal drive towards sort of you know, parents protecting their children (*agreement from Scarlet*) in a similar thing,

kids don't go swimming in lakes anymore. There's just signs everywhere saying this is horrendously dangerous and everyone did it when I was a kid and we went in lakes all the while but people do those kind of things less and less but I think without waving the health and safety flag but I think that's, those kind of policy's have effectively driven a wedge between wake up, get dressed go to work and all that kind of things you do in terms of safety, a lot things involving nature have fallen by the way side because things like that, *climbing trees*, you know, climbing trees was fine when I was a kid but you know, that was just a part of growing up and having tree courses and things like that, it was just part of it but now it's just if I was a, I'd just be a hypocrite anyway as, but if I had children, I don't have any but if I did have I'd probably say 'don't climb in that tree because it's dangerous' because I've kind of changed my perception of it as well as I did it so...

Scarlet: well you do, you do, I mean I've got grandchildren and the same, when they were little, they're your responsibility, it's a bigger responsibility than when you're a parent because somehow if your mum or dad told you not to do it, you know (*hints you would disobey*) and I started to say don't I thought no, no, let them, you know, if they fall and break their arm, they fall and break their arm they won't do it again

Mr. Skaba: I definitely think there has been a societal push though towards not doing certain things and there's pressure on parents to kind of conform to that because you just look irresponsible as a parent and parents don't want to be seen as irresponsible by letting their kids go off and do all these kind of things; they'd rather do things in a much safer way but like as a result, you know, a lot of the things that you did growing up I don't think kids do so much anymore. Just because it's not there as an idea to start with, the

idea of going to climb trees is just not a fun thing to do, there's other things to do, much safer things involving the indoors.

Facilitator: It's interesting that you've been talking about the education side of things as I'm very interested in how that and a study of nature in general can actually lead to a nature connection so the next little prompt I think Ragnar will be interested in maybe. So what do we think when you see something like that?

Scarlet: I see amphibians: a toad, frog, newt a sand lizard?

Ragnar: Yep

Mr. Skaba: what do I think when I see it?

Facilitator: Initially

Scarlet: Again I see fun. You know, I see the pond dipping cycle

Ragnar: A risk

Scarlet: Yeah I was going to say apart from the newts that you very rarely see anymore

Ragnar: amphibians are one of the most endangered groups because of habitat damage as they're really sensitive to it.

Facilitator: Bring back any memories Mr. Skaba? School days, anything like that?

Mr. Skaba: that's probably the first thing that sprung to mind to be fair, I just think of those as the kinds of pictures that would be on the wall in a classroom that kind of thing, nothing sort of specific springs to mind

Facilitator: So how do you think the whole study of nature can lead to that connectedness; how does it work? What kind of factors are involved in making you want to be connected?

Scarlet: as adults do you mean as we are now?

Facilitator: as an adult or maybe looking back at how maybe it worked for you.

Scarlet: Well I think if I look back on mine I wouldn't do what I did do and that was bring it all home in jam jars.

Ragnar: Yeah, yeah

Scarlet: have it on the shelf, let the tadpoles hatch, well the frogspawn hatch. Maybe out of the thirty/forty that were in the jar you'd get one that managed to develop its legs and eventually that would also snuff it so you know, yes, I have been part of their depreciation I suppose to a degree. The same with newts, where they'd, well it's not there now, mackworth college school, before they built the original school they was loads of ponds up there and they were brilliant newt ponds so again we used to come home with newts in our pockets and stuff you know and that's what we did we were none the wiser that you know, it was going to be a time where you could go to lots and lots of different ponds and never see a newt so in a way I am partly but then at the same time it could be of course a lack of education at the time.

Ragnar: Yeah we're in a position now where we can educate kids about these sorts of things. We know what effect we can have on the eco-system, we know all about conservation yet kids are less and less inclined to engage with nature. It's a bit of a

paradox there that we've got the capacity to teach them yet kids would rather go on their x-box's during an evening rather than going out and seeing these animals in nature.

Mr. Skaba: I think part of that might be because it seems like it's a never ending, I mean it is a never ending cycle and that's the thing that people either fail to grasp or I don't know, maybe get frustrated with because like you say, people might have an awareness or an education on conservation or the charities and things but maybe it's the ongoing aspect of it that the people eventually become disenchanted with. I don't know, some people just so at the point it becomes, it just doesn't have much of an impact anymore because it becomes 'oh, another panda we need to save' and it becomes sort of weakened

Ragnar: all the adverts are on deforestation and the pandas going to die and the leopards going to die but I think people just sometimes need to see the sheer beauty of it and maybe from a shallow level, these are the sort of pictures we had on the classroom walls, like we had amphibians and reptiles and birds and again, just seeing the great variations out there it was just wondrous to a child like me and a few others of my generation. I know a couple of them including myself who have gone on in that sort of mind set through their entire lives and it was just learning about them as a kid and being able to actually go out there and play in amongst it all and sample it for myself that allowed me to develop and build up that knowledge. I think again, because kids aren't taken out on field trips they only get the information ploughed into them, it doesn't have the same, not glamour 'cos it's not that it, it doesn't have the same...

Scarlet: Connectedness

Ragnar: Connectedness

Mr. Skaba: It's true, this is a slightly, sorry to interrupt, but it just sprung to my mind when you said that, but it made me think of teaching in a secondary school, in science lessons they just so rarely have practical lessons anymore where you sort of get all the stuff out like Petri dishes and it's everything's just paper based activities now (*agreement from Ragnar*) so I suppose if that is your, from a scientific perspective, a channel into nature, be it biology, physics or whatever it might be, if that is what your perception of it is, it's a bit dull, a bit dry, a bit well, you haven't got a

Ragnar: practical

Mr. Skaba: yeah yeah, but that goes back I suppose to, without waving the flag, back to safety, no this is dangerous, you know, let's just do this exercise on paper

Ragnar: Yeah, if you can't just appreciate it, and all you're getting is dry numbers and how bad everything is and how the world is in a mess and need money, if that's the thing that your always exposed to it becomes 'oh well it's just dead', you get this, just blasé about it (*agreement from Mr. Skaba*).

Mr. Skaba: Yeah you become de-sensitised to it

Ragnar: the world is in a mess, and again, it's not reported in the right way. BBC documentaries they're great and they're really pretty and they get people watching but again, it's just something they can just watch as they sit on their sofa's; that's their does of nature not go out there it's great it's lovely.

Mr. Skaba: We've got HD tv's now so there's no need! (*laughs*) it's ad but...

Ragnar: if you get out there you'll see a lot more of it and the one thing documentaries are lacking is real fact; it's mainly just pretty pictures and general overview but you're not

reading a book in a high level on the subject but which people are put off by; they don't want to have to learn

Mr. Skaba: A lot of the time they've still got that negative angle to them that there isn't a positive, you hear very little of the successes of any charities that you might, you know, make contributions to because they need to keep driving the angle of things are going wrong, 'cos if you say 'oh it's great now, it's great'

Ragnar: 'we've fixed it'

Mr. Skaba: you're going to stop giving your money! (*laughs*)

Ragnar: People will stop giving their direct debits

Mr. Skaba: Exactly so, it's difficult in a way to create a positive feedback if you like to these people without essentially, to put it bluntly, without scaring them off.

Ragnar: I think you've got to start the seed before the kids start to get exposed to all the negative parts of the real world, get them interested, say, explain what an amphibian is, you know here we've got salamanders, newts, toads, you know, show them how these animals fit into the world. They've got this whole beautifully elegant, metamorphic lifestyle that they go through stages, explain to the kids and students through second year, how this works and how this fits in and you know, the genes that are involved. It is a whole beautiful system of evolution and you know, just to understand that is a wonderful thing but if you're just told that newt is dying out, give us some money, it doesn't, you're still learning about the newt from a completely different angle, just like you were saying, it just...

Mr. Skaba: it doesn't resonate

Ragnar: yeah, it's crap, it's horrible to think that that beautiful newt is going to die; if you've learnt about what the newt is, and why it's such a wonderful thing that's worth saving, that rings far true with me than seeing an advert on tv saying 'give us £3 a month, we'll stop a marsh from drying out' well why? I don't care but you know, if I know a bit more about it, then yeah, but again, I realise it takes time to educate people, taking time to get the kids excited about it 'cos after a certain age you've lost them, so I find that's true for a lot of things though, not just animals but anything that getting kids interested early on will keep them going, if you don't get to them at the right age, you know I'm not saying they'll become delinquents but it's very easy to just go off on a different tangent so if you don't get them interested early on then whether it's nature or any other career path, it's very easy to lose it.

Facilitator: And what about you Scarlet, your involved with (*group omitted*) what do you do within that framework that would relate to this?

Scarlet: Well on a regular type thing, we do activities, nature based activities for children like a drop-in thing, meadow sweeps to look at all the insects

Ragnar: Ah yeah the bio-blitz

Scarlet: We don't always know what they are you know, still and the pond dipping of course we do and we do things sort of connected with trees as a topic. There's all sorts of different aspects, right from going to the 'you can climb this tree, why would this tree be good to climb?' 'oh because it's got low branches', 'but why has it got low branches?' 'because it's this shaped tree' you know, and then collecting the conkers and we still do, do conker fights you know, shhh, health and safety and all the rest but we do do it occasionally the ones and all that sort of thing, the different types of bugs and why the

bug is on the oak tree, why is it on the chestnut tree and so forth and that type of thing. We did do the first Derby bio blitz on Markeaton park which was good and a lot of work which was good yeah so you know, we've also got our hands tied by the lottery bid that has been put in which has been put in by the heritage lottery and because they hoped, but they didn't know but we've got it now as things are moving on but it's don't do this don't do that in case they come along and dig it up you know so hands were tied a little bit but there's more. Although it's the heritage lottery bid, worked it crafty that they need to put this path in here of where Bonnie Prince Charlie came in and because we're having to move that then we can do something else and the lottery bid would pay for it so we're hoping to get a decent meadow out of it for the backfields that actually belong to the farm but never use it so, and things like that so there's a certain amount of environmental stuff coming in as a, as a side line but don't tell the lottery people!

Facilitator: and what type of reactions do you get when kids or anyone is getting involved?

Scarlet: they're fascinated the children are with anything; you get the 'ooooh it's a spider' (*imitating fear*) you know, type thing and if you're confident with whatever creature it is and you can handle it, then invariably they will handle it. There's not any, it's just that they think they should just go 'ooooh it's a spider' you know, and when they see, most insects look brown until you look at them and then you see that it's got, it's a green shield beetle and it's got little black spots on it or the dots on a ladybird and all this type of thing and the variety that is in one sweep of the net on some of the grass that they, 'cos that's how they start it; 'what can you see?' 'grass' yeah, that's all they can see, that's all I can see unless there isn't an obvious butterfly flying around you know, but go deeper and they love it, plus they like it 'cos we tip the stuff onto a white sheet and obviously because

they're insects you've got to be quick because they're off! (*laughs*) even if you want to, we've got those, I don't know what you call them but the glasses with the magnifying glass and stick that over the top

Ragnar: a view box

Scarlet: yeah and if you're quick enough, you know, to sort of get a look but yeah, it is it's, and they want to stay longer than whatever time you've got with them, you know they are really keen

Ragnar: Open their eyes and they're amazed (*agreement from Scarlet*) that's brilliant

Scarlet: and again, they're not just the insects but with all of it all the different things. Fungi is another thing that interests younger children as well, all the different styles of them and how you, I think maybe I'm a big fairy person so you know, if we've got the ones that are on dead trunks you get like a village and we stand there and we say well that could be the school, you know and we even have to knock on them to see if there are any fairy's at home (*general laughter*) but you know it just sort of goes from there and they're just sort of the, I don't know the names of them all, the little whitey ones and then of course you get the fly agaric, the little red one's

Ragnar: oh the Amanita yeah, yeah

Scarlet: so you goes from there and yeah, they do enjoy it

Facilitator: And do you see that as a route to getting them interested later on and in feeling 'I'm a part of this world, I'm connected to nature' (*agreement from Scarlet*)

Ragnar: Yeah once you see the communities that live within a bush or a tree, it's not just a tree, it's a whole inter-connected web like nature connectedness. Nature itself is connected to everything else; nothing lives in isolation. Nothing, you can't do it so when you see fungus living on a dead tree, the tree's dead but there's still life coming from it, it's, the fungus is there fulfilling the role you know in what happens to the wood once it's been broken down by the fungus, what about the insects living amongst that, the insect lifecycle continues living on trees which the birds then feed on then something else eats the bird, the bird dies then life just keeps on going and once you can explain to a kid that birth, life, regeneration, death is all connected, is all there, it's happening all the time for some it sparks, it did for me and it affected my entire life once I got my head around that and it can be a wonderful thing right up to like you say about sweeping the grass for a few insects, a single drop of pond water on a microscope slide under a low powered microscope and people, they look down a lens and it's hundreds of little things swimming about, little bits of algae floating around you know and beautiful multi-cellular beach balls of green with little hairs bouncing around you know, little eggs and it's just from a single droplet of water and it just opens up their eyes to a whole new world whether it's a bush or a bank of grass or a single drop of water it's all there. But until people actually see it, it's just water or it's just a patch of grass; it's amazing, once you've shown them it can do wonders, it really can but you need, they need to be pushed in that direction...it's wonderful

Facilitator: and is there do you think kind of a maintenance aspect to it as well?

Ragnar: you need to keep it going. You need to feed the fire as it were, another metaphor as it were

Scarlet: I will say as well I find that these days schools are good at doing that now you know they came, they come, we had the big bio-blitz but we had one or two what we call children's bio-blitz where they came for a day from schools and that and then they took, apart from the work that they did in finding all these things, they took stuff home to make collages and to make reports with photographs and that sort of thing and we went back later to judge the art work that they'd done but apart from that, when you'd got all that at the schools you saw like your whatsit all the ones that had come off it and how they'd encompassed in one day probably six months work that was still involved in that one day and I think schools do well in that respect now you know whereas it wasn't just one visit, that's it forget it.

Ragnar: it's actually making them work on it, make them think about it (*agreement from Scarlet*), analyse it to a degree

Scarlet: Yeah, I am talking about the young children; the primary's but it was, I felt was well done

Facilitator: Thank you, that was good. What we'll do is move on to the final section. So we've covered this a little bit, well you guys have a bit of this already so I'll show you this (*a sheet of nature based charity logos*) you'll probably be able to recognise most of them as you've spoken a bit about them so just again say what you think to all of them, again, first impressions, what you think or feel about individual ones or one as a whole

Scarlet: well as a whole, I see money (*general agreement*) I do

Ragnar: I see varying degrees of respectability as some of them don't have such a good reputation to be honest, somewhat tied up in the politics and headlines than others for sure; people will know which ones I'm talking about who have just been involved in a

mess with Russia haven't they? They found hard drugs, the Russians found hard drugs on the ship that they seized who they've been having trifles with; it's just things like that.

Mr. Skaba: I agree with you I think that you see money which is ironic really as I am one of those people with a monthly direct debit for world wildlife fund. Interestingly as well, it's made me think that I give the minimum amount to more animals rather than just committing to one. I don't know if that's because of starting out so I give my £3 a month to snow leopards and go yeah I like snow leopards, they're cute in exactly the same principle that came out, what was it called again?

Ragnar: the charismatic macro fauna

Mr. Skaba: Yeah, yeah, so it works perfectly on me so I'm going to give money to save and then they'll send me more stuff in the post 'this is brilliant, thanks so much but the tigers...' 'oh, what about the tigers?! (*laughter*)

Ragnar: They're also cute, they have cute babies

Mr. Skaba: So you end up giving three to them and it sort of grows and grows and grows so yeah I'm kind of a hypocrite in a way in terms of my involvement with them is probably, like I said, almost a guilt driven, almost a guilt driven thing like you look at it and it's the most, in its rawest form 'they're so cute, let's save them' so you give your money but I don't necessarily feel great about it, I'm not naïve enough to think that I'm making a difference so I think 'oh well, let's not give them money'

Scarlet: But you do make a difference I mean otherwise if your direct debit wasn't there, they'd be that much short

Mr. Skaba: Yeah...

Scarlet: but if everybody thought the same then they'd have none (*agreement from Mr. Skaba*) but I personally won't do the direct debits, I'd rather put it in the tin because the direct debit I did do once and like you say every other week there was another letter for a bit more or buy this or do that and I thought 'no, I'm not being pestered!'

Mr. Skaba: They phoned me up, they phone you up asking you to increase your direct debit (*sigh of disgust from Ragnar*)

Scarlet: If they saved the money on postage and paper in asking me to increase mine, you'd have had the increase

Mr. Skaba: That's exactly what I said to the person on the phone (*agreement from Scarlet*) I said if they weren't paying people to sit in and office and phone people, to phone the existing customers to say will you up it to a five or ten pound a month

Scarlet: they'd have that five or ten pounds

Mr. Skaba: they'd have that money but it goes, I'm not cynical enough to think that the money isn't going to make any difference otherwise I would've cancelled it, I keep doing it but...I don't know people's, I suppose it really comes down to your level of commitment to it. You want to think that you are making a difference. You accept a certain amount of corporate involvement and hopefully there will be some tangible outcome at the end of it; however that much is I'm not sure.

Scarlet: Personally I would rather support English, you know, like the woodland trust so it's improving our environment in England, protecting our species rather than go world-wide for *myself*. I've no objection to anybody else going world-wide but I think that the

people who live in those countries that live where that particular species is should be the ones being educated in order to do it and to save them and not me here in England

Facilitator: Well I suppose that's all part of the solution

Scarlet: well it could be me just being selfish, you know but I think if you don't concentrate on your bit here and at least get that right how are you going to spread?

Ragnar: I think there needs to be a worldwide effort or nothing will work (*chuckles*) there's, there's always going to be animals at risk, especially migratory species as it's all very well the RSBP making sure the marsh lands are perfect over here but as soon as the bird goes and flies then to Africa and it gets shot to be put in a stew, we can't do anything about that and it probably cost a hell of a lot more to instigate education in other countries than it would just to make sure there was a reserve set up

Mr. Skaba: And I think part of the money does go towards sort of community education and things like that but I only know this from my monthly snow leopard news review letter (*laughter*) I'm not professing to know a great deal about it but I do remember reading it and part of the what sprung to mind was the efforts to try and stop, you know reduce hunting and things so I think it's all probably mixed in

Scarlet: Yeah and going back to what you said about everything's sort of negative rather than 'oh we've done it' you do with the woodland trust they have set themselves a project to save so many acres of whatever wood and do it and you do get reports back from them of having been successful in lobbying or what have you to prevent them being cut down or they're also planting and how successful the woodlands have been so there's an element of both you know 'we've been successful here but this area here now needs our attention'

Mr. Skaba: I think successful reports sprinkled with negativity

Scarlet: Yeah it is, it's to get you to get on the next project

Mr. Skaba: Yeah its necessary isn't it? And it goes back to that point that we were talking about earlier with this never ending, maybe that's part of the reason why people slowly become disconnected to use the term because of this on-going, seeming lack of a solution because ultimately that's what people really want; they wanna go 'yay we fixed it, they're all fine' but because that never happens. You can only sort of do it for so long before people just become tired of it and somebody else can pick up the slack

Ragnar: they become jaded by it (*agreement from Mr. Skaba*)

Facilitator: so how then can someone's conduct toward nature make them a bit more connected to it? What are the key kind of things that they can do? Because obviously people do support charities, they do voluntary work that kind of thing. So people are doing it for a reason, hopefully for a moral one

Scarlet: Yeah I think my one was, two things on mine everybody, well not everybody but people tend to think there's always somebody else doing it whatever it is on the volunteer front. At one time volunteers were considered good, well-meaning people! and all the rest but because of all the cutbacks and things, I'm a little annoyed that the powers that be *expect* to get volunteers now that part does annoy me but at the same time if you don't get them, things will go rack and ruin and things will be lost or whatever aspect of volunteering you're doing that you're talking about so part of me is one way, part is the other. I don't think anybody should rely on the fact that they're going to get volunteers to keep a park going or the care home going or you know because they've got volunteers going in that will do this that or the other but it's become like that through financial things

Mr. Skaba: it needs to be re-framed away from it becoming an expectation; it really removes the word volunteer (*laughs*) it kind of re-frames the whole thing volunteering, if there's an implicit expectation that it's going to be done (*agreement from Scarlet*)

Facilitator: What gets people to want to volunteer or be involved with nature in that respect then? What is that driving force or is there one?

Mr. Skaba: I don't know, that's what I thought; do people... firstly do people want to be connected to nature and to know the answer to that you sort of really need to know what they constitute being connected to nature. Someone might think that having a pet cat is being connected but I personally don't feel that way but somebody else might do so I don't know it's...

Ragnar: the individuals experience and background comes into it a lot at that point

Mr. Skaba: It's difficult to frame it

Ragnar: I think for somebody who came from the countryside and went from the countryside to living in the city, just being able to do some volunteer work in a local park might be a really big deal whereas for somebody who is from out of the countryside they'd think 'oh, I'm good' (*agreement from Mr. Skaba*) their own benefit from volunteering is not necessarily quite so altruistic but I think to get people in the mood to try and make a difference it goes back to everything we were discussing earlier in they need an appreciation of what difference they can make, they need to know that yes they can make a difference but it won't fix it 'cos nothing will ever be fixed because it will always be shifting and we will always be growing, we'll always be moving. I think that's the point rather than letting them get to the position where 'well I'm not making a

difference so I'll quit' but let them see that they are actually helping (*agreement from others*)

Mr. Skaba: It also depends on their motivations as well in that, that just reminded me of a company I used to work for quite a few years ago that is quite big global company, an I.T. company and I worked in their one of the main offices and they spent hundreds of thousands turning the roof of this building into like a garden so you could literally go to the top floor, go out the fire exit and there was, you could have meetings up there, there was plants and it was just like a roof garden but for an office building. It was strange because it was an office and it was obviously an office as well as it was grey, grey with green hair...essentially is what this building was and it started off and it was great and everyone was saying this is brilliant and people used it all the time and it lasted about a month and then it just became this wasteland on the roof and then all the, all the greenery slowly, I worked in the building for about seven years and was there from the get go when it was just like 'we have the roof garden' to it becoming slowly just ebbing away 'well we're not going to bother planting that; we'll just fill that with some stones' so eventually, it was just a path, the roof was just a place you could go with some benches around. So it goes back to my original point I suppose about the motivation for wanting to do it; the corporation want to, their motivations are sort of 'we're looking after the wellbeing of our staff, look we're providing all of this stuff 'and so it ticks all of the boxes for them in terms of that was their motivation for doing it but maintaining it, I dunno, it didn't have that lasting effect, it was almost a novelty thing

Ragnar: Yeah they needed to make the effort to maintain it (*agreement from Mr. Skaba*) see that was possibly a dropped ball in that it could've had a very real impact on staff morale for a start

Mr. Skaba: Well yeah this was it, that was the whole, I mean when the project started and going to all the meetings and everything and you see all the artists impressions of what this is going to look like and everyone was on board and everyone thought this was great and we can have meetings on the roof and it'll be great and it's good and it lasted for about one or two summers and then people just went 'ah, I can't be bothered to go all the way up the stairs' you know, so people just don't bother I don't know it just made me think of like you can get people connected in some kind of way; it goes back to what you said about feeding the fire. Maintaining that connection, whether you educate people and then you sort of you have this really great experience where you just come home and think 'oh that was amazing' but like how you sort of keep that going without the pressures of just day to day life just superseding you know, the perceived importance of that, I don't know...difficult.

Scarlet: Looking at it from again and older perspective, we get some people come because they've retired, they're at a loose end you know 'I don't know if I want to come and plant some trees in the park, it's not my sort of thing' 'oh go on, go on' and then thoroughly enjoyed it and then they'll come back but it's they have got the time now and if they're not careful that time is spent sat in front of the box all day so you know it is a good motivation to go out and get connected to nature together for the social side of it initially and then work on...

Mr. Skaba: I think it depends on whether they enjoy it and the only reason I say that is because I'm one of them; I'm guilty of that, you go camping, not been camping for years, and think 'this is great, I love it, I should be doing this every weekend!'

Ragnar: It feels good while you're there doesn't it

Mr. Skaba: yeah you love it you know, making a fire, cooking food, and just sort of...

Ragnar: It's like walking in a woods; it feels good to breathe.

Mr. Skaba: But you know, if you don't keep it up you just, you forget about it; it just falls by the wayside, you sort of go back to that environment you think 'oh, I should do this more often' but life gets in the way I suppose...

Facilitator: That's good, thank you. Well we've pretty much come to the end now, its two o'clock; it's flown by but thank you very much. Have you got any, just any other thoughts that you wanted to just say about the topic of nature connectedness, how you feel about it; whatever you want really.

Scarlet: Well all I was going to say was I still can't understand how people don't connect/won't connect and I don't, I can't tell them enough exactly what they're missing

Ragnar: Hmmm, it's very hard to put into words isn't it (*agreement from Scarlet*) there's, there is a known beneficial effect of being in a woodland as there is an excess of negative ions pumped out by the leaves that generates a sense of well-being but any, next time any, all of you, when you walk through woodland take a deep breath and it makes you feel better; it generates a sense of wellbeing and it's because there's an increased concentration of negative ions in the local atmosphere that generate this feeling

Mr. Skaba: Oh I didn't know that

Ragnar: The greenery lets it out and that's quite, not addictive but when you're in there you feel wonderful; 'why don't I do this more?' but then once you're out of there its back to, you're back to your common self. But I was gonna say is a lot of people get almost a sense of spirituality about nature is that spirituality, I don't, I'm not religious in any way

in fact I'm quite the opposite but what I feel when I'm out amongst it, whether I'm at work or just roaming up a beach or doing a bit of fossil hunting you know, looking at rocks, seeing nature for all its glory I guess I get the scientists equivalent of spiritual feeling as you can see it all out there and with a little bit of insight it's so much more than just looking at rocks or just looking at trees. When you've dug a little bit of the surface it's greater than the sum of its parts because you can appreciate so much more of but only that comes again from everything we've been saying today; spending that little bit of time gives much more back and you need to be able to show people that's how it works I think you'd have a lot more people doing voluntary work or being out and about at weekends whether it's biking or trekking or camping if they could see a little bit more of what's under the surface when they look out the window than just a field and a patch of mud

Mr. Skaba: So contextualising it in sort of the, it's not just a tree kind of thing; this is the relevance In that this is the bigger picture

Ragnar: I go walking in Yorkshire as often as I can on the beaches there because it's such an ancient seascape and you look at the cliffs and the banded rock you know, each signifying millions of years sedimentation and again to anyone else it's banded rock but you start explaining to someone what that means, what that represents where the patterns is preserved in there, the organisms that have died out, the weather patterns that are present there and it's a picture, a snapshot of life a hundred and sixty million years ago in one stretch of rock and again they didn't know it was there. I've literally sat on a beach with a family breaking up some rocks and showing them what's in them, these shells and different parts and they've gone away going that's wonderful, that's amazing and they've taken fossils home and I hope it's generated a little bit of enthusiasm...it's amazing what a difference you can make.

Scarlet: yeah I do that with the grandchildren and I said 'do you realise you're the first person in two million years to see that'

Ragnar: Yeah a teacher did that for me when I was six or seven again, It probably wouldn't happen nowadays but the teacher took me back to her house to meet her husband who was a palaeontologist, I'd got an interest in dinosaurs as all kids do but a bit more than other kids and he showed me his workshop full of fossils and he gave me a couple of them to take home, you know, real fossils not bits of broken shell; an actual vertebrae from the spine of an ichthyosaur which is like a big reptile dolphin and he let me take it and said that's a bone from an animal and again it changed something in me that still to this day I go up to Yorkshire two, three, four times a year fossil hunting and that was when I was six but again it planted that seed that made me go further and now I'm a zoologist so (*laughs*) yeah you can do it but I think if it's not caught, folk'll lose it but yeah get out there, breathe the air and you'll get much more from it than watching it on David Attenborough

Mr. Skaba: Summing up in terms of your point, you put it quite well. What it comes down to is identifying what peoples idea of connected to nature is and then if you can identify that then that's the starting point that you can then channel that because you need to have a starting point of what I thin connectedness to nature is and then sort of that needs to be channelled and maintained by some means depending on what their perception of what connectedness to nature is so 'cos that's the hard part

Scarlet: Yeah but also bearing in mind some of the time not all of us can be zoologists

Ragnar: Oh no

Scarlet: but there are ordinary jobs to do

Mr. Skaba: Yeah that's what I mean, everybody has their own if you say what is being connected to nature, you need to tap in to what that individuals perception or conceptualisation of it is to then transform that into something that is then 'how can that be maintained' so for arguments sake, if you connect to nature by planting trees then you need to find ways to maintain that and set things up so that that can become a hobby or a routine; I think routine is a huge thing that it gets in the way of things because there are certain things that we have to do and things need to be made part of that routine if they're gonna be maintained and unless you adopt something into your daily routine (*agreement from Scarlet*) it's just going to fall by the wayside.

Facilitator: Awesome, thanks very much....

END

Appendix 4.11 Table of Themes

Biophilic Value	Coding	Theme	Extract
Utilitarian	<p>Reliant on nature's provision</p> <p>Involved in food production</p> <p>Involved in a natural process</p> <p>Larger scale development lowers nature connection</p> <p>Working within the natural order of things</p> <p>Relying on nature to provide</p> <p>Removed from hard work</p> <p>Human made conveniences</p> <p>Left to others to be involved with nature</p> <p>Roles within society</p> <p>NC is relying on nature</p> <p>Not involved in a process</p> <p>Investing in nature</p>	<p>Involved hands on with a natural process for your own benefit</p>	<p>if you live as you did in the country, you were farmers, you were, you cared about nature and keeping everything ticking over. In the city we don't have to think about it 'cos foods in supermarket, how it gets there (Colin, FG1, pg 24)</p> <p>everything we want and need in the supermarket or we've got a house and all that sort of thing and city, if you go to the rural you have to nurture it whereas if you don't in the city because someone else is doing it for you. So the people in the city don't think about nature too much 'cos they don't have to. But the people in the rural areas and farming have to think about it, have to care about it after nurturing it because we're busy doing other things. (Colin, FG 1, pg 26)</p> <p>I think if you went to get a glass of milk and you can just go to the shop next door or bang a stair, you're In the countryside where it's ok, I've gotta have the cow, then I've gotta milk the cow and the whole process of ok, what do I need to do to and then drink it and I want to, how am I gonna nurture this to then it...do you know what I mean? (Mickey, FG 1 pg 26)</p> <p>that's because we don't have to 'cos someone else is doing it but you go to his farm, he's having to do that on the farm but he's also got to look after the, the environment because if he doesn't, it won't work! We've controlling our environment to some degree so we don't have to bother too much and that's why people are, to me, are less concerned about what happens out, to nature, call nature is the environment (Colin, FG 1, pg 27)</p>

			<p>yeah that's what I mean, it's not just a total reliance on say if you have to do everything it becomes totally self-sufficient on yourself then you have that much more connectedness I suppose so you know (<i>sighs</i>) that's just how we've evolved (Mickey FG 1, pg 28)</p> <p>yeah but it's kind of, it's (<i>1 second pause</i>) I, I get this whole idea that if we had to do a bit more we'd all be a little more connected to the environment, however you want to term it but portraying it in such a negative light but I think it also allows you to do a lot of things that society has become reliant on, and you might say we don't need those things, we don't need specialisation of education systems or people, you know, everyone should just be pitching in and just growing food and stuff (Rubin, FG 1, pg 29)</p> <p>Do you not feel that it would be different if you came from an environment where you didn't know there was an option, because you've been given the choice if you could live where you want, if you were from a community where you didn't know could move because over in other areas where you've chipped in and you all needed each other, would you maybe feel more connected to nature? (Calico, FG 1, pg 23)</p> <p>Well again, probably, I think at social class as well kind of it's going from kind of listening to my dad and when he was growing up you kind of, small house, five brothers, five sisters and mother and father kind of they relied heavily on nature 'cos they were farming everything was ok if they don't, if we had a bad winter or errr the spuds, the potatoes aren't gonna be and I know as mad as it sounds but that that's kind of their livelihood, they've relied a lot on nature and how that kind of how important that was for their stability sort of thing, errm, so yeah I think it depends if you've got money and if you've got all this I suppose that can take away from your feeling of feeling connectedness to nature (Mickey, FG 1, pg 23)</p> <p>Keziah: by making them aware, by making children aware at school by bringing in, sort of gardening things like that into the curriculum by bringing it into maths, English, all these things in these subjects and err, using gardening together with that and making it so that they are actually interested in it and enjoy nature (FG 2, pg 6)</p>
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			<p>Keziah: no, no the recent work done erm, where they've actually incorporated it into schools and they were quite complimented by offstead by it as they've incorporated it into the subjects into the work that they're doing in the garden and erm, I think it was princess royal visited erm and she was absolutely amazed at what that teacher, she had a lot of input from the other staff but it actually brought the rewards 'cos they knew where, a lot of the children didn't know where their food came from; they thought cheese grew on trees, they had no idea. They didn't know where fish fingers came from, they thought it was chicken and things like that so yeah, you laugh but a lot of children don't know and so what they did they grew vegetables and so they knew what the root vegetables and where, which part of the plant they ate and things like that and so that was brought into counting out the seeds and you know, things like that. Everything was incorporated. (FG2, pg 7)</p>
Utilitarian	<p>Material worth of nature</p> <p>Using nature to meet desires</p> <p>Using nature responsibly</p> <p>Human creation is still a part of nature</p> <p>Using nature for own purposes</p> <p>Using nature for human benefit</p> <p>Using nature to benefit humanity</p> <p>Increase in consumption</p>	A selfish use of nature	<p>It's being utilised purely for human purposes, you can tell that by the way it's been landscaped, it doesn't benefit anything beyond human (Calico, FG 1, pg 6)</p> <p>Now the fact that we're getting the human consumption and we're getting the food so easily mean's our population rises; is that a good thing or a bad thing for nature that we become too many 'cos if it is, because we're too many that's a bad thing for nature then that is a bad thing (Colin, FG 1, pg 9)</p> <p>we are stopping nature from doing what it would normally do by our actions (Colin, FG 1, pg 16)</p> <p>Do you see it as a balance between quality of life and the things you enjoy and not slightly selfish when we look at the global effect its having on in terms of thousand fold of species increased extinction (Calico, FG 1, pg 30)</p>

	<p>Harm of over populating</p> <p>Use of nature is not always good for nature</p> <p>Destruction of nature for humanity's gain</p> <p>Responsible use of nature</p> <p>Natural equilibrium</p> <p>Lacking a motivation to change</p> <p>Scared into changing</p> <p>Use and abuse of nature</p> <p>Damaging nature through irresponsible practices</p> <p>Nature will outlast the human race</p> <p>Seeing a problem but not willing to act</p> <p>Too little too late</p> <p>Preserving a habitable environment</p> <p>Better management of humans and nature required</p>	<p>but will we when it comes to: 'to do this, this is how I like to be' will people sacrifice the things that they enjoy like hovering the carpet as opposed to using the dustpan and brush? (Calico, FG 1, pg 32)</p> <p>yeah I know but the fact that we've we've it's not still just black bin; dump everything in there, get rid of it, dump it, stick it in the mine I don't care but we've started, startin to reuse things. So I know we're not doing it as well as people think we could but we're starting to make that awareness. (Mickey, FG 1, pg 33)</p> <p>the landfills running out, what do we do with all of this?! So we've had to change, we've had to adapt and the other thing that has always struck me is about the human being, it appears to be something like a bacteria 'cos what that does, it starts off with a lag phase (if you've ever done bacteriology) yeah? And then we go to the height of activity and then it creates and environment which is so toxic it slows down and finally destroys itself. But by then something else grows out of that or can do. So it, the, if we don't get our heads round it, we are just like a bacteria (Colin, FG 1, pg 33)</p> <p>well the thing is that we can alter our actions which will alter what happens to the earth. We, we can't do all the things that we've done and not have any affect I mean the reason we have floods in places because we take away the tree's, build things on the floodplains, pushes the water out of other areas so we're, we alter our own environment. We're altering it in this case for the worst but we have the ability to alter it for the better but it's convincing people and getting people to alter the way that we, that they think. Well that's what... (Colin, FG 1, pg 36)</p> <p>it's difficult to say to someone in India that you can't have your refrigerator you know but we've got all ours equally it's difficult to say to someone over here oh stop smoking or stop producing greenhouse gasses when India and Russia are opening a new nuclear power station literally every month and three hundred and sixty coal fired power stations a year and you think of the scale of what I can do and what I can achieve (Stersvevier, FG 1, pg 39)</p> <p>but even then with, I've done a lot of environmental campaign work and stuff and from my course and we do that but everyone in my class is still a hypocrite; they all drive, they smoke, they eat meat, it's just like you know,</p>
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	<p>A lack of immediate consequence means little interest</p> <p>Change only when the worst happens</p> <p>Stay as you are until it's too much</p> <p>A global problem</p> <p>Increase in misuse of nature</p> <p>Acting irresponsibly despite knowing the consequences</p> <p>Acting despite knowing better</p> <p>Making a sacrifice for nature</p> <p>Misuse of resources</p> <p>Getting around restrictions</p> <p>Use of nature is a global issue</p> <p>No shared consensus</p> <p>Progress through a misuse of nature</p> <p>Negative impact of the human species</p>		<p>you're educated people who are then going off in the future to teach people this stuff and it doesn't make a difference to you what goes on (Calico, FG 1, pg 40)</p> <p>Calico: but is that true? We use, we over fish the oceans, people know about it but we're still not stopping it to let it recover</p> <p>Mickey: yeah but still I know that but right now but I still go down to the shop I know, I know that but everyone does, you still go down to the shop and there's fish there</p> <p>Calico: there's everything there but there are people who have made a choice, like I've chosen to abstain from eating fish</p> <p>Mickey: yeah but then that's down to quality of life (<i>laughs</i>) like do you know what I mean? Like I still gonna have me dinner (FG 1, pg 41)</p> <p>it depends all on how we progress I mean if we do manage to err find a way of travelling in space, we may destroy this planet and go to somewhere else and destroy that one (<i>laughs</i>) (Colin, FG 1, pg 46)</p>
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	<p>Misuse of nature will eventually catch up with us</p> <p>Same attitude, different place</p> <p>Taking precautions</p> <p>Making a change before it's too late</p> <p>Nature as a commodity</p> <p>Financial worth of nature</p>		
Utilitarian	<p>Using nature to its fullest</p> <p>Making use of damaged land</p> <p>Using nature is viewed as a bad thing</p> <p>Making use of natural amenities</p> <p>Working with nature to further humanity</p> <p>A part of nature but removed from natural processes</p> <p>A close knit community working together</p> <p>Reliant on nature to provide</p>	Making the most of the natural landscape	<p>well you don't know that was the UK. Wherever it is you don't know what was there before so it's hard to compare whether this is better or worse. That could have been a brownfield site, and industrial estate, a real dump, it could've been anything you don't know. It is what it is now but whether that's better or worse than it was, you have no way of knowing (Stersvevier, FG 1, pg 8)</p> <p>you look at examples of native Indians when they're dealing with herds of buffalo, they would cause an entire herd of buffalo to stampede off a cliff and you take whatever you could carry back to the camp so they've just massacred a herd of buffalo, they've just, we've become far, far, far more efficient at doing it (Rubin, FG 1, pg 11)</p> <p>Yeah it all comes down to education and we've evolved and understood ways which is why I think we can, to some extent control elements of nature. If you look at the picture, what we're doing there is we're providing these with the nutrients for the way we want them to develop or the way we want it to grow or to keep certain insects off it. With what we've developed, we've kind of controlled it to some extent as we can't control weather, we can't control other destructive elements of nature but the way we've</p>

	<p>Need to be involved</p> <p>Reflecting on uses of nature</p> <p>Failure to plan ahead</p> <p>Essential for survival</p> <p>Rural living leads to an appreciation of nature</p>	<p>developed, we're way more effective at controlling certain elements and probably in years to come we'll become even more effective in other aspects. But other things will come and nature will, kind of adapt and other things will come even diseases like cancer now is probably one of the key things that is killing a lot of people but in years to come, we will have come up with a cure for it and then there will be something else there taking us so that's nature kind of adapting and (1 <i>second pause</i>) yeah. (Mickey, FG 1, pg 15)</p> <p>I think it depends where you come from, what kind of community you grow up in. People who grow up in a very urban environment it just wrote that you work in a supermarket and that you live in a high rise tower and there isn't that much green around you and you've never had reason to interact with it. But is you've come from a more rural community or in local villages wherever, and you are more interactive as your more reliant on making sure that you have food, security and things that you actually have an input in rather than buying things off... (Calico, FG 1, pg 19)</p> <p>Well again, probably, I think at social class as well kind of it's going from kind of listening to my dad and when he was growing up you kind of, small house, five brothers, five sisters and mother and father kind of they relied heavily on nature 'cos they were farming everything was ok if they don't, if we had a bad winter or errr the spuds, the potatoes aren't gonna be and I know as mad as it sounds but that that's kind of their livelihood, they've relied a lot on nature and how that kind of how important that was for their stability sort of thing, errm, so yeah I think it depends if you've got money and if you've got all this I suppose that can take away from your feeling of feeling connectedness to nature because potentially you could, you can for living you can get by some people live, like if you're looking, if you look at the news and you see all these natural disasters and people's houses and livelihood taken away, that's massive to them and 'cos that's possibly all they can get by on. (Mickey, FG 1, pg 23)</p>
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Biophilic Value	Coding	Theme	Extract
Dominionistic	<p>Connected to an idealised natural world</p> <p>Romanticised view of the natural world</p> <p>Connected to an ideal view of nature</p> <p>Artificial environments</p> <p>Limiting/restricting nature</p> <p>Improving the natural landscape</p> <p>Nature as a special case</p> <p>Connected to the nature we like and in control of</p> <p>Shaping nature to our own design</p> <p>Appeal of 'clean' nature</p> <p>Preservation of our natural ideal</p> <p>Creating an idyllic natural landscape</p>	Creating an idyllic form of nature	<p>we just want to see it nice an rosey and sweet and flowers and little bunny rabbits and buttercups; that's nature but it isn't, you know, you see whatever there is, is nature... you're going to be a tiger so if you're not a vegetarian as a tiger so your gonna have an impact on the local eco systems . You're a predator, you have to exploit what else is around and available to you (Stersvevier, FG 1, pg 10)</p> <p>Rubin: a part, when a volcano goes off and destroys an entire continent, you still go</p> <p>Stersvevier: so that's how we interpret it</p> <p>Rubin: we still go that's still nature, grass is still and tree's and parks and things (FG 1, pg 12)</p> <p>again that's nature again. We're back to going full circle. Just because it's not the nature that we're used to i.e. is not the experience we are used to or want or like or feel in charge of (Stersvevier, FG 1, pg 35)</p> <p>Keziah: yeah, yeah, erm, and colours as well I mean I, I, tend to like different coloured leaves and sorts of flowers. Flowers I think are so short lived and you lose them and you've just got the basic plant left so I like them with varying coloured leaves which can at a distance, look like flowers if you like so you've got the very pale leaves and then you've got the reds, the oranges so at a distance it can look like flowers. And I like a natural looking garden, I don't like a formal Facilitator: so what's the difference?</p> <p>Keziah: a natural one is more as it would grow in nature if you like and not red, blue, yellow</p> <p>Keziah: planted, you know, little bedding plants; I don't like formal gardens. I don't like them at all as it's not how nature would do it. Nature would do clumps of things and spread naturally (FG 2, pg 20)</p>

	<p>Ordered nature</p> <p>Preference for particular parts of nature</p> <p>Adverse to rough nature</p> <p>Garden spaces still provide NC</p>		<p>I think it, it's a very calming experience isn't it if your stressed. In usual life it's very rushed, it's stressful and it can clam you down. And I've found places like that are very peaceful and you can just chill out and lose yourself. And with seeing artwork as well but not as much as, as being actually in the place itself and the same with gardening; that's how I lose myself...equally, it depends how, I don't know, it makes me feel good. Errm but whether, it doesn't always make everybody feel good, it depends how you are yourself to some degree. (Keziah, FG 2, pg 12)</p>
Dominionistic	<p>Question of control</p> <p>A desire to be dominant</p> <p>The myth of humanity being above nature</p> <p>Humanity is separate from nature</p> <p>Endeavours remove us from nature</p> <p>Controlling nature for human purposes</p> <p>Technological control</p> <p>Shaping nature for human purposes</p>	<p>Humanity: the controller of nature</p>	<p>so what you're saying is that man does not control nature...he can't control it because he's part of it (Colin, FG 1, pg 12)</p> <p>Yeah it all comes down to education and we've evolved and understood ways which is why I think we can, to some extent control elements of nature. If you look at the picture, what we're doing there is we're providing these with the nutrients for the way we want them to develop or the way we want it to grow or to keep certain insects off it. With what we've developed, we've kind a controlled it to some extent as we can't control weather, we can't control other destructive elements of nature but the way we've developed, we're way more effective at controlling certain elements and probably in years to come we'll become even more effective in other aspects. But other things will come and nature will, kind of adapt and other things will come even diseases like cancer now is probably one of the key things that is killing a lot of people but in years to come, we will have come up with a cure for it and then there will be something else there taking us so that's nature kind of adapting and (1 <i>second pause</i>) yeah. (Mickey, FG 1, pg 15)</p>

	<p>Controlling nature for human benefit Belief in our own superiority</p> <p>Human development/progress</p> <p>Shaping nature to our own design</p> <p>Stepping over the line when controlling nature</p> <p>Control of nature is an illusion</p> <p>Not in charge of nature</p> <p>Innovation as a tool to control nature</p> <p>Controlling nature to benefit humanity</p> <p>Some nature we cannot control</p> <p>Some nature can be managed</p> <p>Not as dominant as we think</p> <p>Dominant action leads to less control</p> <p>Everything is controlled, both nature and humanity</p>		<p>that's where the arrogance comes from it, where we have divided ourselves from the animals where you go animals/humans keeping them separate (Calico, FG 1, pg 5)</p> <p>a controlled environment as everything is...nature in that way is being sort of, I wouldn't say tamed but sort of controlled just for a specific aim whereas nature in itself just does its own thing if you err you know (Colin, FG 1, pg 6)</p> <p>we're not going to completely destroy nature. Nature could quite easily make us extinct if we were, if we go about things in the wrong way and at that point in time, nature carries on regardless there's (<i>slight laugh</i>) the, I err, it's very difficult to see a point in time where we and nature aren't, are no, nature no longer exists at all... (Rubin, FG 1, pg 9)</p> <p>you don't say when a, you don't, the reason why we don't believe we can control nature is because we've developed, we've got a method of reflecting upon it, because we, other animals don't go oh, hold on a minute I've just used these twigs to build a nest am I controlling nature here? Is this something unnatural? It's not, it's not part of what they do because they can't reflect on any of it. All of this idea that we reflect on what's natural and what's not natural, that's, that's just because we can reflect on these sorts of things. (Rubin, FG 1, pg 14)</p> <p>ah well we're not 'cos nature if you just leave it to itself, what would happen? If this, if we went away, what would happen? It would just, have vegetation here, animals but there aren't because man's come in and he's done these things, he's built, we've actually done the opposite to what nature would have done naturally. (Colin, FG 1, pg 16)</p> <p>but we're talking about it like it is negative because as much as...(<i>1 second pause</i>) we are part of nature and all of that, the object of nature is to exist and procreate but if we are putting everything in concrete which isn't alive, and we're building and we're destroying things for more agriculture things and stuff, it's reducing the amount of things that are alive (Calico, Fg 1, pg 18)</p>
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	<p>Control over nature is an illusion</p> <p>Control over nature means we're less connected to it</p> <p>Belief in dominance is arrogance</p> <p>Nature will endure</p> <p>Mastery over nature for now</p> <p>A position of Power</p> <p>Controlled use of nature</p>		<p>we, we're managing and that sets us apart from the other animals 'cos they don't, they live with it but we manage, we try and manage it. I'm not saying we do it well but we try and manage it and that's how, that's the difference between the bird out there and us. 'cos that's living with it. (Colin, FG 1, pg 44)</p> <p>do you not think so? Do you not think that at some point all of these disaster things that we've been talking about well, will come back to bite us really, really hard and we'll, suddenly we'll go oh, look how powerful nature is?! We can't really manage it half as well as we thought we could and when we do start to manage it really, really well, errm, bad things happen. Really bad things happen that's, I think we're just going to be as governed by these rules and laws, it's just we think we're above them. (Rubin, FG 1, pg 44)</p> <p>Rubin: yeah but we're just better able to adapt at the moment. At some point we won't be able to adapt to changes and</p> <p>Mickey: no, no I agree</p> <p>Rubin: and society will either fall apart or reduce the population numbers and if there are any of us left to carry on reflecting upon these things we'll reflect on it and go ooh, look how powerful nature is and at that point we'll be more connected (FG 1, pg 44)</p> <p>there's got to be some limit, at some point whether it's across some one hundred planer empire that we've got or, we're not, we're not gonna manage to, as a species to keep living forever! To think that we are above nature and that we are so powerful that we can control (Rubin, FG 1, pg 45)</p> <p>and we're so confident that we as a race will continue to survive but at some point those laws and those rules about how many members of a species need to actually survive, need to be able to procreate healthily and need to have that level of food. We're not immune to those laws, just because we can, things are reasonably good now and we can control things, grow huge amount of crops, great! (Rubin, FG 1, pg 48)</p>
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<p>Dominionistic</p>	<p>Opposing nature</p> <p>Human progress</p> <p>Limiting the natural course</p> <p>Working against the natural order</p> <p>Scale of impact</p> <p>Importance of human progress</p> <p>Natural checks on human action</p> <p>Limiting the natural course</p> <p>Shaping nature to our own design</p> <p>Skewed human perspective</p> <p>Shaping nature for our own ends</p> <p>Natural checks to humanity's actions</p> <p>Natural forces are stronger than humanity</p> <p>Human made disasters</p> <p>Humanity is not a special case</p>	<p>Humanity at odds with the natural world</p>	<p>ah well we're not 'cos nature if you just leave it to itself, what would happen? If this, if we went away, what would happen? It would just, have vegetation here, animals but there aren't because man's come in and he's done these things, he's built, we've actually done the opposite to what nature would have done naturally. (Colin, FG 1, pg 16)</p> <p>we're doing it but we're altering, we're not working with nature in this case, we're working possibly against it because we're stopping the natural course of events (Colin, FG 1 pg 17)</p> <p>but we're talking about it like it is negative because as much as...<i>(1 second pause)</i> we are part of nature and all of that, the object of nature is to exist and procreate but if we are putting everything in concrete which isn't alive, and we're building and we're destroying things for more agriculture things and stuff, it's reducing the amount of things that are alive (Calico, FG 1, pg 17)</p> <p>we, we're managing and that sets us apart from the other animals 'cos they don't, they live with it but we manage, we try and manage it. I'm not saying we do it well but we try and manage it and that's how, that's the difference between the bird out there and us. 'cos that's living with it. (Colin, FG 1, pg 44)</p> <p>but when we're extinct in in whether it be thousands millions of years, the, you know, nature will do whatever it will with these buildings that we've and are nothing and will be part of the system again whether they degrade or they, they just crushed by the elements or whatever it is so I think it's an odd kind of distinction between those two things (Rubin, FG 1, pg 5)</p> <p>With what we've developed, we've kind a controlled it to some extent as we can't control weather, we can't control other destructive elements of nature but the way we've developed, we're way more effective at controlling certain elements and probably in years to come we'll become even more effective in other aspects. But other things will come and nature</p>
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	<p>Going against the natural order</p> <p>Consequences of our actions</p> <p>Human made disasters</p> <p>Humanity is not a special case</p> <p>Going against the natural order</p> <p>Consequences of our actions</p> <p>Natural order of things</p> <p>A problem of our own making</p> <p>A grandiose self-perception</p> <p>Nature not needing a human presence</p> <p>Natural disasters may cause a rethink</p> <p>Impact of the dramatic</p> <p>Motivated by disaster</p> <p>A natural check to keep the balance</p> <p>Domination sets humanity apart</p>		<p>will, kind of adapt and other things will come even diseases like cancer now is probably one of the key things that is killing a lot of people but in years to come, we will have come up with a cure for it and then there will be something else there taking us so that's nature kind of adapting and (1 <i>second pause</i>) yeah. (Mickey, FG 1, pg 15)</p> <p>we are stopping nature from doing what it would normally do by our actions (Colin, FG 1, pg 15)</p> <p>Colin: well I'm not saying it's bad, I'm saying are we, we're not working with nature, we work to our own programme...don't we?</p> <p>Mickey: Yeah, our own needs</p> <p>Colin: not necessarily, sometimes it works with nature, sometimes it works against it but we have the ability to alter things whereas a bird, can't really alter that much. It can pick some twigs off the floor and make a nest, fine, but it can't, it can dig a hole, an animal can dig a hole to live in</p> <p>Mickey: hmmm</p> <p>Calico: but we're talking about it like it is negative because as much as...(1 <i>second pause</i>) we are part of nature and all of that, the object of nature is to exist and procreate but if we are putting everything in concrete which isn't alive, and we're building and we're destroying things for more agriculture things and stuff, it's reducing the amount of things that are alive (FG 1, pg 18)</p>
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	<p>Not living with nature</p> <p>Bound by the laws of nature</p> <p>Natural order of things</p> <p>A problem of our own making</p> <p>A grandiose self-perception</p> <p>Nature not needing a human presence</p> <p>Natural disasters may cause a rethink</p> <p>Impact of the dramatic</p> <p>Motivated by disaster</p> <p>A natural check to keep the balance</p> <p>Domination sets humanity apart</p> <p>Not living with nature</p> <p>Bound by the laws of nature</p> <p>Adapt to survive</p> <p>Dealing with one threat only to be faced with another</p>		
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	<p>Managing a threat</p> <p>Adaptation can only occur for so long</p> <p>Belief that humanity will prevail</p> <p>Little fish, big pond</p> <p>Still only a natural animal</p> <p>Humanity as a special case</p> <p>Using technology to survive</p>		
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Biophilic Value	Coding	Theme	Extract
Negativistic	<p>Accustomed to a set quality of life</p> <p>Modern comforts</p> <p>Enjoying a good quality of life</p> <p>Enjoying a comfortable life</p> <p>Easy lifestyle</p> <p>Nature enhances life quality</p> <p>Desire for a comfortable life</p> <p>Non-reliance on nature provides opportunity</p> <p>NC sacrificed for better quality of life</p> <p>Modern life is more than survival</p> <p>Enjoying modern comforts</p> <p>Modern developments make for a better life</p> <p>Wrapped up in self interest</p>	Enhancing quality of life	<p>that's it that it's aimed at evolution as well and how well we've developed and the need and want for more or for greater mass comes down to...to this you know we look back at where we used to live, primitively, that's, nature was able to provide that for us. As we became more developed and kind of smarter as a species we kind of wanted more... (Mickey, FG 1, pg 10)</p> <p>I'm Colin and I think I'd like to be a domestic cat because you get the (short pause) food provided, the living conditions and you do whatever the heck you like (Colin, FG 1, pg 1)</p> <p>Mickey: but again that's coming down to the, can humans get this quality of life and kind of, yeah OK, if we went back to living in the tree's and going out and living like we used ta, we've now got used to this higher quality of life due to how we are developing and I know I</p> <p>Calico: but it's wrong to do that</p> <p>Mickey: yeah it is but it's down to kind of we've experienced this higher quality of life and then us as humans reflected on as this is what I wanted it to be and again, it may lead to more building buildings like this etc. yeah it may have negative aspects on the environment for other species but for us as humans it's improved things for us (FG 1, pg 19)</p> <p>It's down to your experiences as well you know like I know I came from a rural background in Ireland and to me, I couldn't, if you asked me to move to Dublin or to move to London I wouldn'ta be able to do it 'cos, I probably could've done it and adapted but down to what I wanted I, I like having the rural aspect to, so it depends on your kind of views . If you've never experienced stuff, you might be aware of it but the experience of is this something I want for my quality of life. Like if I was living in London, yeah I could probably be doing the exact same job but I wouldn't be as happy</p>

	<p>QOL related to nature in many ways</p> <p>Wanting a better life</p> <p>NC can be positive for QOL</p> <p>Change comes when lifestyle is threatened</p> <p>No immediate benefit</p> <p>The will to act</p> <p>Access to nature only for the well-off</p> <p>Desire for modern comforts</p> <p>Everyday living blocks NC</p>	<p>'cos I like the fact that in Derby, I've got a mix of rural and urban to some extent and that is just done to experience of us being humans and it's down to what my view is what quality of life is. (2 second pause)...yeah (Mickey, FG 1, pg 20)</p> <p>Do you see it as a balance between quality of life and the things you enjoy and not slightly selfish when we look at the global effect its having on in terms of thousand fold of species increased extinction (Calico, FG 1, pg 30)</p> <p>but the things is I, well this is just my personal view, as much as I know it's great, everyone wants a great quality of life and we can sit here and go well yeah if we change this in little ways, well I've heard people go well it's, this, the changes I make now are not gonna impact in my lifetime; it's gonna be my grandkids and I know, I know this is, like I don't agree with them but a lot of people think that well actually this isn't my problem (Mickey, FG 1, pg 36)</p> <p>I, I personally think in order for the whole of human's to change their views and the way they do things, something massive has to happen in terms of if there's a massive natural thing that says this could've been changed by that then people will start going 'holy shit, maybe we could've done this a lot differently' but I don't think the majority of people would think that they would change unless something massive impacts their way of life. And I know, that's the only way people can say well yeah being connected to nature in this and my interests I enjoy this and I enjoy that but if that's not going to impact on their quality of life...they might, they might feel bad about it for a minute or two but then they just carry on with their day to day lives until something comes in and just drastically impacts their quality of life and it's something that they had the ability to change; will they do something? Because it's as again when your, if it's not, if you can handle it why are you gonna bother with it? It's not changing my quality of life here, I can get by with it, until something comes in and threatens that it's under those kind of environments where your being threatened when you then</p>
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		<p>make the greatest changes as ‘I don’t want to be in this environment no more’ but if it’s not impacting me then, I’m not saying this is my view I’m just saying a lot of people think that and going why am I going to bother?! (Mickey, FG 1, pg 38)</p> <p>I think it’s down to people go well, this is all being done around the world already so what’s me not doing it? It’s not going to make that much of a change me personally. (Mickey, FG 1, pg 40)</p> <p>personally I think a lot of it as humans is developed it is that fear. If something is gonna be taken away from you, you’re gonna do everything you can to change to keep that there (Mickey, FG 1, pg 40)</p> <p>Calico: but is that true? We use, we over fish the oceans, people know about it but we’re still not stopping it to let it recover</p> <p>Mickey: yeah but still I know that but right now but I still go down to the shop I know, I know that but everyone does, you still go down to the shop and there’s fish there</p> <p>Calico: there’s everything there but there are people who have made a choice, like I’ve chosen to abstain from eating fish</p> <p>Mickey: yeah but then that’s down to quality of life (<i>laughs</i>) like do you know what I mean? Like I still gonna have me dinner (FG 1, pg 41)</p> <p>I think the pace of life is a huge factor, I think that’s really what things come down to. I think people are so busy in their lives, managing their lives I don’t, I don’t necessarily think people are conscientiously disconnected to nature, I just don’t, I think time is a huge factor in terms of where people find the time to fit things in. so I think things just, we lose focus with things, we’re so busy with our lives; we’ve got to do this and pick this up and go shopping and do that, go there and do this report and all the rest of it, the pace of life</p>
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			is ever present and it can be difficult to put a stop to that 'cos even when you are sort of on a break from work or anything like that, usually you've got plans (Mr. Skaba, FG 3, pg 6)
Negativistic	<p>Removed from nature</p> <p>Connected to a city life</p> <p>Disconnection with nature</p> <p>Limited appeal of nature</p> <p>Lure of urban living</p> <p>A matter of scale</p> <p>Nature is not convenient</p> <p>Lifestyle of a city dweller</p> <p>A less connected, busy life</p> <p>A convenient lifestyle</p> <p>Urban web of life</p> <p>Urban dwellings removed from nature</p> <p>Urban and natural divide</p>	Connected to urban living	<p>yes possibly but not...<i>(1 second pause)</i> when you say more connected to the world that you are in or more connected to nature, well the world that I'm in is built up of my experiences and, you know, that is the existence that I live with it. So yes if I came from a different community I, that, that perception would probably be different but I would be a completely different person altogether so I have no idea, you know I'd be, it's completely theoretical and hypothetical kind of question 'cos I'd probably completely different in the way that I am now. (Rubin, FG 1, pg 23)</p> <p>I think it depends where you come from, what kind of community you grow up in. People who grow up in a very urban environment it just wrote that you work in a supermarket and that you live in a high rise tower and there isn't that much green around you and you've never had reason to interact with it. (Calico, FG 1, pg 19)</p> <p>the lure to the urban err sorry to the person living in the rural environment the lure of the urban environment is greater than the other way around (Stersvevier, FG 1, pg 21)</p> <p>because for me, I perceive Derby as being quite rural compared to where I'm from, 'cos I'm from down south in Watford which and reasonably close to London then I'm used to things being open for longer hours, public transport being slightly easier to get around, things like that when I go back to Hong Kong even, it's, you know it's even more urbanfied as things are open all night long and things like that. I see those things as positives whereas other people probably see them as negatives errm and I do</p>

	<p>Modern technology blocks NC</p> <p>Removed from nature</p> <p>Preference for urban contact</p> <p>Prioritise inside dwelling over natural contact</p> <p>Cut off from nature</p> <p>Not appreciating nature</p>	<p>understand that there are negatives associated with it; levels of pollution are gonna impact on your quality of life things like that as well. But errm, to me, particularly my partner errm, she quite likes rural environments, she likes going for long walks err she has an allotment plot and things like this errm, whereas I don't see as much value in that kind of thing but it's just, I think it's just different perspectives and it's part of the stuff is the values that her parents have passed onto her and her social environment that she's been told, you know that she feels these things are all very, very important as part of life (<i>emphasised</i>) and to quality of life. Errm whereas to me, a lot of the things to do with convenience and more urban living, I kinda prefer so I don't think there is a right or wrong to it, I think there is certainly a wrong if you go too far either way but to an extreme of either way in the same way that you know, all foods, it's kind of a balanced diet is what's advised, you don't stick to one pretty extreme, you know, if you refuse to move from that view, errm, but I think there has to be some level of balance in the world (<i>murmurs of agreement</i>) (Rubin, FG 1, pg 23)</p> <p>you don't need to err, you don't think too much about nature, about what's happening 'cos your too busy getting by. (Colin, FG 1, pg 24)</p> <p>yeah but it becomes, it, the idea of what do we need, you kind of have to consider what do we need for what? I mean what do we need in order to survive is very different from what do we need to have a society where you can have people doing PhD's and you know, going, doing all of these sorts of things (Rubin, FG 1, pg 26)</p> <p>everything we want and need in the supermarket or we've got a house and all that sort of thing and city, if you go to the rural you have to nurture it whereas if you don't in the city because someone else is doing it for you. So the people in the city don't think about nature too much 'cos they don't have to. But the people in the rural areas and farming have to think about it, have to care about it after nurturing it because we're busy doing other things. (Colin, FG 1, pg 26)</p> <p>yeah but, but I think that applies for everything including nature, I think we're encouraged to think about natural processes currently because it's quite a hot topic at the moment, far more than your encouraged to think about other kinds of processes that are doing things for you I mean people</p>
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			<p>complain constantly about petrol prices and things but you when your filling up your car do you go ah, hold on a minute, this has been dug out of somewhere and they've had to refine it about twenty times and there's, there's a dozen blokes on a, on a rig somewhere, you don't think about all of those processes, those man-made processes that we call them (Rubin, FG 1, pg 27)</p> <p>I kinda like I don't think I'd see that as a utopia. I quite like that there's someone who grows loads of food for all of our nurses who then go and look after the sick people in the hospital and that's part of society and there's also people who grow loads of food who feed our teachers who teach our young people who grow up and maybe the balance that we've got isn't right but... (Rubin, FG 1, pg 29)</p>
Negativistic	<p>Desires met</p> <p>Comforts as a barrier to NC</p> <p>Modern life lowers risk</p> <p>A desire to have more</p> <p>Enjoying the benefit of modern living</p> <p>Balance between nature and human made comforts</p> <p>Want vs. need</p> <p>Never satisfied</p> <p>A desire to have more</p>	The choice between want and need	<p>Rubin: yeah but it's kind of, it's (<i>I second pause</i>) I, I get this whole idea that if we had to do a bit more we'd all be a little more connected to the environment, however you want to term it</p> <p>Colin: Yeah</p> <p>Rubin: but portraying it in such a negative light but I think it also allows you to do a lot of things that society has become reliant on, and you might say we don't need those things, we don't need specialisation of education systems or people, you know, everyone should just be pitching in and just growing food and stuff (FG 1, pg 29)</p> <p>I kinda like I don't think I'd see that as a utopia. I quite like that there's someone who grows loads of food for all of our nurses who then go and look after the sick people in the hospital and that's part of society and there's also people who grow loads of food who feed our teachers who teach our young people who grow up and maybe the balance that we've got isn't right but... (Rubin, FG 1, pg 29)</p> <p>Stersvevier: so surely if that eradicates that risk is an improvement so agriculture</p>

	<p>A lazy, disconnected society</p> <p>More than basic desires</p> <p>Sacrifice for natures sake</p> <p>Choices to make</p> <p>Materialistic lifestyle</p> <p>Creating the desire to change</p> <p>Connect due to fear</p> <p>Experience effects of environmental harm to increase NC</p> <p>Industrial wealth</p> <p>Self interest</p> <p>Appreciating what you have</p> <p>Fear of losing nature</p>		<p>Mickey: that's what I mean</p> <p>Stersvevier: yeah</p> <p>Mickey: big time 'cos that's the way we do it is about kind of, it's about having that balance of want and need</p> <p>Stersvevier: yeah</p> <p>Mickey: it's the, well ok, what is it that we need? Ok, what is it that we want?</p> <p>Stersvevier: but then it goes on and becomes exploitation (FG 1, pg 25)</p> <p>yeah but it becomes, it, the idea of what do we need, you kind of have to consider what do we need for what? I mean what do we need in order to survive is very different from what do we need to have a society where you can have people doing PhD's and you know, going, doing all of these sorts of things. Ok, do we need to do those things is another question that maybe we should ask (Rubin, FG 1, pg 26)</p> <p>everything we want and need in the supermarket or we've got a house and all that sort of thing and city, if you go to the rural you have to nurture it whereas if you don't in the city because someone else is doing it for you. So the people in the city don't think about nature too much 'cos they don't have to. But the people in the rural areas and farming have to think about it, have to care about it after nurturing it because we're busy doing other things. (Colin, FG 1, pg 26)</p> <p>which is essentially yeah but then it comes down to it's that, I know it's a broad term but that want and need. Like for us to survive we can get by on this, this and this (Mickey, FG 1, pg 29)</p> <p>it's one of those things that's again down to want and need either but yeah I love it because I get to live longer, I get to have a better life and I can do all this but it's again...(Mickey, FG 1, pg 30)</p>
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			so what you've got to do, you've got to create that need in them either by fear (<i>laughs</i>) or by, you know what's going to happen if we don't but for that you've got to show 'em what's happening you can't just tell 'em, you've got to actually... (Colin, FG 1, pg 40)
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Biophilic Value	Coding	Theme	Extract
Aesthetic	<p>Teaching artistic skills</p> <p>Being inspired to paint</p> <p>Painting nature whilst using your own creative license</p> <p>Capturing the moment</p> <p>Inspired to be creative with nature</p> <p>Taking a photograph for a lasting memory</p> <p>Capturing a unique moment</p>	<p>Taking note of nature and capturing the moment through painting or photography.</p>	<p>Keziah: it could well be yes, 'cos they're showing people what, you know if you're out painting or</p> <p>Don: I was going to say if you see something like that (<i>points to Monet picture</i>) they might take the sketch pad and sketch, paint. It could introduce them to it couldn't it?</p> <p>Facilitator: What about, you do some photography.</p> <p>Don: ummm (<i>in agreement</i>) it's the same thing. You see a good picture like that, you'd want to take it</p> <p>Don: (<i>2 second pause</i>) it's, you're taking the picture like that because you don't see it every day, it's something different. (<i>2 second pause</i>) and your taking pictures so you can show it to other people to say 'look, I saw this yesterday, not seen one of these before' like you were saying (<i>to Keziah</i>) about your dragonflies (FG 2, pg 10)</p> <p>Keziah: your becoming aware of things and also it's the beauty of it. Though if you show, if Don does a photo say of Edale or wherev... 'where did you</p>

	<p>Noticing nature to increase NC</p> <p>Looking at the colours of nature</p> <p>Memorable experiences</p> <p>Noticing nature with others</p> <p>Hunting to spot animals in the landscape</p> <p>Need to focus on nature</p>		<p>take that?’ ‘That’s at Edale, it’s really nice there; perhaps we could have a run out there and take a look?’ so it gets people out to visit the places that you see. (FG 2, pg 11)</p> <p>Frank: if they’re drawing something, and they obviously, errm if you look at something outside, they can maybe put something from what they’ve seen elsewhere into that picture to make it unique and to make it to their own picture so it can influence their learning on drawing or painting or even photography and trying to put pictures together. So it’s obviously learning and they get to become connected to nature by looking and taking note of what’s around. So yeah... (FG 2, pg 11)</p> <p>Keziah: Hmmm (<i>in agreement</i>) well certainly in the peak district in Derbyshire errm I think if you go out and take photos there they’ve been quite dramatic haven’t they? (FG 2, pg 17)</p> <p>Don: if you take a good photograph of something you’ll always remember; you’ll look it up in your book and think I remember that and you’ll remember what you were doing that day, it’ll bring it all back to you (FG 2, Pg 18)</p> <p>Scarlet: No I think some people definitely don’t grasp the importance of the bond if you like of being with nature you know, I mean I’ve got an uncle who he loves walking, absolutely loves walking but he cannot see the point in walking across a field; it’s always street walking, ‘what do you want to go out there for?’ (Scarlet, FG 3 pg 5)</p>
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<p>Aesthetic</p>	<p>Appreciating the beauty of nature</p> <p>Seeing wild animals for the first time</p> <p>Appreciating the uniqueness of nature</p> <p>Showing unseen nature</p> <p>Exposure to new natural sights</p> <p>Seeing something new</p> <p>New nature experiences</p> <p>Seeing nature from a child's perspective</p> <p>Searching for nature</p> <p>Missed nature on your doorstep</p> <p>Fear that nature won't show up</p> <p>Waiting for nature is not interesting</p> <p>Raising awareness</p> <p>Visual appeal of nature</p>	<p>Searching for nature you've never seen before.</p>	<p>Don: well a lot of youngsters have never seen a cow or a lamb, sheep only pictures on television. They've not seen <i>them</i> in the fields. I've taken youngsters out and they've never seen a cow or a sheep before so I know I'm going back a few years but it happens and it could be that today. (FG 2, PG 8)</p> <p>Keziah: that's why they go on trips to farms for nursery's so they actually get to know about the animals and things... it shows them what's out there so that they're aware of what is around them so it just draws them in to being interested and to caring for things so that hopefully in the future they may want to take some care of the environment and all the wildlife. You can only try and encourage that is, that is the only thing with children that you build on that for the future.(FG2, pg 8)</p> <p>Don: by taking them out to the countryside and getting them to look at things they haven't seen before and hoping that 'cos they've seen it now they'll want to see it again. Like the kids with the errm, animals they've not seen before. They want to go again to see them again and that's true that is. Not so much me, I used to do the seniors but the wife used to do the juniors and they used to ask her 'when are we gonna see the animals again? When are we gonna see the sheep and the cattle?' 'cos as I say, these youngsters they've never seen the, I don't know what it's like today 'cos I don't (FG 2, pg 23)</p> <p>Frank: yeah (<i>laughs</i>) it's just America's animals are a lot bigger and like the ants are a lot bigger than here, the birds are a lot bigger than here and it's just a new experience... just seeing something new and it's obviously I was little then so it's more exciting then 'cos your little and it's a lot new. Whereas now, errm, I would go but I wouldn't be as excited (FG 2, pg 25)</p> <p>Don: bears at the side of the road and seeing Elks were right up at the top and we thought they were sheep but according to the courier they weren't sheep, they were mountain goats. But the majority said, well we all said they were sheep right up at the top but they're not they're mountain goats. And as we climbed up the mountain as you got nearer you could see they were goats but we all thought they were sheep. You see, you remember these things. (FG 2, pg 26)</p>
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	<p>Contact with rare or new nature</p> <p>Novel nature experiences</p> <p>Vivid experience</p> <p>Taking delight in novel nature</p>		<p>Frank: it's people putting effort into making finding new places where people haven't been before and setting up activities/tasks things like that like Don does walks whereas someone who went to the same walk route might get bored quite easily but if someone picks somewhere new to go to visit occasionally then people are more likely to go to and keep on wanting to go to 'cos obviously nature is always changing, the climate is always changing things like that; it's new experiences is all. (FG 2, pg 30)</p>
Aesthetic	<p>Natural spectacle</p> <p>Larger scale</p> <p>Impact of fantastical nature</p> <p>Impressive and dramatic sights</p> <p>Filled with awe at nature's wonders</p>	Impressive and dramatic sights of nature	<p>Keziah: Hmmm (<i>in agreement</i>) well certainly in the peak district in Derbyshire erm I think if you go out and take photos there they've been quite dramatic haven't they?</p> <p>Don: if you take a good photograph of something you'll always remember; you'll look it up in your book and think I remember that and you'll remember what you were doing that day, it'll bring it all back to you (FG 2, pg 17)</p> <p>Frank: but they were massive and you remember them 'cos compared to here they're 20 times the size and it's things like that. Like you saw like grizzly bears (FG 2, pg 25)</p> <p>Don: Yeah, just looka, just look at that it's brilliant I didn't think they'd be as big as those (<i>1 second pause</i>) like I say it brings things to you that you could use every day but you don't think where it'd come from, how'd you get it? (FG 2, pg 28)</p>

Biophilic Value	Coding	Theme	Extract
Symbolic	<p>Living at one with nature</p> <p>An oasis to recuperate</p> <p>At one with nature</p> <p>The garden as an oasis</p> <p>A part of nature</p> <p>Nature is a part of home</p> <p>Inclusion in nature</p> <p>Using nature to relieve stress</p> <p>Losing yourself in nature</p> <p>Immersed in gardening</p>	Creating your own natural retreat	<p>Keziah: I think it, it's a very calming experience isn't it if your stressed. In usual life it's very rushed, it's stressful and it can clam you down. And I've found places like that are very peaceful and you can just chill out and lose yourself. And with seeing artwork as well but not as much as, as being actually in the place itself and the same with gardening; that's how I lose myself. Even though it can be hard work, a lot of people don't like it because it is hard work but you, yeah Frank is laughing, ermm, but you can actually forget a lot and get out there and then when you see what you've achieved at the end of it then it's great. (FG 2, pg 12)</p> <p>Frank: time to themselves, ermm, (2 second pause) be away from the life around them maybe they've got stress at work so it's something calming out in the wild (FG 2, pg 27)</p> <p>Keziah: for me its ermm, being able to get out there with it being in the garden or in the countryside and being with animals and it doesn't bother me if I have anybody with me or not, in fact it's quite nice to be on my own out there 'cos I'm at peace with nature anyway whatever it is ermm and I think we get so much out from it so it's self-fulfilling anyway. (FG 2, pg 30)</p>

Symbolic	<p>Talking about and sharing nature experiences</p> <p>Creating mental images</p> <p>Focussed on animal your speaking of</p> <p>Directing thoughts towards nature through language</p> <p>Bringing nature into the everyday</p> <p>Need for two way nature conversations</p> <p>Passion for nature means you speak of nature</p> <p>Tailored communication</p> <p>Talking to nature as a sentient</p> <p>Nature is sentient</p>	Talking about and sharing nature experiences with others	<p>Frank: every word you say brings a picture in your mind so like if you say an apple, an apple comes into your mind. Raining cats and dogs, you think of a picture of it don't ya, in your mind (FG 2, pg 14)</p> <p>Facilitator: in nature connectedness? How do you think that relates to how connected people are?</p> <p>Frank: it gets you thinking about nature. So obviously your thinking more, talk about it</p> <p>Keziah: I just talk about it normally anyway if I've seen something and I just say erm, but what did we say last night? A bat didn't we? (FG 2, pg 15)</p> <p>Keziah: maybe if I knew they weren't interested at all, prober, I may not even mention it but to Frank I would probably say 'oh I've just seen a bat' and he'd say, being on his playstation 'oh have you?' and I'd say 'right, ok' and walk out but at least I'd tell him. Now with Don, I'd talk to him and tell him and he'd be looking you know but I'd still tell them but in a slightly different way yeah. But if somebody just it was plain they wouldn't be interested then maybe I wouldn't say anything. (FG 2, pg 15)</p> <p>we went shopping to ASDA a few weeks ago, they'd got a lot of new deliveries of bedding plants and there was a toad walking near them and a little boy was watching it with his mum and he was doing no harm and he was very interested, he was only about three and I said to him 'can I take that home to my pond to be with my frogs?' and he said 'no' and I said 'well, the thing is there is a lot of boys coming out of the school here and they might tread on it, they might hurt it; do you think I can take it?' and he</p>

	<p>Sharing NC enhancing activities with others</p> <p>Encourage others to connect</p> <p>Indulging in symbolic encounters</p>		<p>said 'yes'. So I put it in, Don fetched a bag and we put it in and I said 'are you going to say bab-bye?' and he said bye to it and 'I'll take it and look after it at home' and he was happy with that and we took it home and put it in the water. I cannot stand to see an animal struggling but that, that's me errm and I'd do it. I don't care if I get laughed at I just do it. They were sat on the seat at ASDA and they thought it was hilarious but we took it in the car didn't we (<i>to Don</i>) and took it back with the shopping and put it in the garden but that's, that's me. (FG 2, pg 16)</p>
Symbolic	<p>Being part of a living world</p> <p>The bigger picture</p> <p>Our actions are a result of our animal nature</p> <p>Animal life has a minimal impact</p> <p>Acting as nature intended</p> <p>Importance of values</p> <p>A web of life</p> <p>Accepting the magnitude of nature</p> <p>Immersed in nature</p>	<p>A life connected to the nature around us</p>	<p>Don: oh we probably wouldn't be here without nature would we? We rely on nature...(3 second pause) we wouldn't survive especially for bee's and things like that, they keep the universe going don't they (FG2, pg 2)</p> <p>Rubin: I find the terms quite errm ambiguous sometimes and I do wonder whether I'm just making it difficult for the sake of it being difficult because we all have this shared understanding of what nature is and as soon as you kind of say being connected to nature, you kind of understand it as being green things and wildlife and tree's and, but the fact that we kind of divide natural things and man made things and separate them and say that these are natural and these are man made...I think it's quite arrogant for us to go well actually things that are made by man we are not going to include them in the division of nature because we are all part of nature as it is (FG 1, pg 4)</p> <p>Rubin: we're not going to completely destroy nature. Nature could quite easily make us extinct if we were, if we go about things in the wrong way and at that point in time, nature carries on regardless there's (<i>slight laugh</i>) the, I errr, it's very difficult to see a point in time where we and nature aren't, are no, nature no longer exists at all... (FG 1, pg 9)</p>

<p>Symbolic</p>	<p>Nature the restorer</p> <p>Nature re-claiming the land</p> <p>Nature endures</p> <p>Human course vs. natural course</p>	<p>Nature re-claiming the world</p>	<p>Stersvevier: Yes it's like fire in the Australian bush, you can look at it and say it's adverse but in essence it burns down useless wood and scrub and allows new growth so (FG 1, pg 5)</p> <p>Rubin: but when we're extinct in in whether it be thousands millions of years, the, you know, nature will do whatever it will with these buildings that we've and are nothing and will be part of the system again whether they degrade or they, they just crushed by the elements or whatever it is so I think it's an odd kind of distinction between those two things (FG 1, pg 6)</p>
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Biophilic Value	Coding	Theme	Extract
Naturalistic	<p>Experiencing pleasant smells</p> <p>Physically touching a range of textures</p> <p>Touching a plant to get a pleasant smell</p> <p>Enjoying the smell of herbs and flowers</p> <p>Direct contact with wild nature</p> <p>Touching soft nature</p> <p>Once in a lifetime moment</p> <p>Seed collecting when walking</p> <p>Connected to nature through physical contact</p> <p>Desire to touch and hold</p> <p>Physical contact with plants</p>	Using touch and smell to connect to nature	<p>Keziah: well you can buy a lot of fragrant plants so you can have really nice smelling corner of a garden, fragrant ones like lavenders and herbs and things like that and also different leaves; furry leaves, spikey leaves ‘cos they do have sensual gardens for sight impaired people errm they’re good. (FG 2, pg 20)</p> <p>Don: you draw your hand through (<i>does so with the bean plant</i>) like that in a mass of mint and then smell it; beautiful smell. But if you don’t do that, you wouldn’t get the smell would you? If you just looked at it, you wouldn’t get the smell so you’ve got to touch it to get the smell (FG 2, pg 20)</p> <p>Keziah: well, stroking an animal; that is calming (as long as it doesn’t bite you) errm but anything to do with...and close up, being close up to a wild animal is pretty, you know, full on. Errm, seeing them in detail ‘cos you see them on television or you see them at a distance and it’s nothing like seeing something close up or watching them.</p> <p>Frank: it’s animals that are soft int it</p> <p>Keziah: yeah</p> <p>Frank: you won’t want to touch animals that are rough</p> <p>Keziah: I mean yeah, I’ve picked up a hedgehog and the spines, how prickly they are</p> <p>Frank: you don’t really want to touch them again do ya? If there like a goat, their quite rough fur</p>

			<p>Keziah: yeah well this is just it, I've touched a goat, you know different types of fur and sheep all wool (FG 2, pg 20)</p> <p>Keziah: and it's, I say they're very different when they're up close and and pick it like the seeds that you find in woods and things, you pick up all sorts of stuff. It just brings you closer to nature doesn't it? It actually, you can see things but that's an entirely different thing to actually touching something. You've actually got, you're using another sense aren't you; not just your eyes. You, it's, it's a tactile thing isn't it? (2 <i>second pause</i>) it's like anything, when you go shopping, most people won't look at a dress or a whatever, erm, they have to touch it and it's the same with nature; you automatically want to touch. (FG 2, pg 22)</p> <p>Don: like you say they like to go and feel them and touch them, the different furs and the different food they eat 'cos they don't know. (FG 2, pg 24)</p>
Naturalistic	<p>An inherited nature connection</p> <p>Childhood experiences</p> <p>Importance of upbringing</p> <p>Setting the foundations for nature connectedness</p> <p>Investing early to grow NC</p> <p>Pliable when young</p> <p>Investing for future NC gains</p> <p>Every child matters</p>	Setting the foundations for nature connectedness	<p>Keziah: by making them aware, by making children aware at school by bringing in, sort of gardening things like that into the curriculum by bringing it into maths, English, all these things in these subjects and err, using gardening together with that and making it so that they are actually interested in it and enjoy nature (FG 2, pg 6)</p> <p>Keziah: well yeah but I'm talking about very young children and that's introducing it so that maybe they may go on to some that aren't academic maybe would go on and do things like that like gardening... but if it puts the seed of interest there then it's something that may be carried on (FG 2, pg 7)</p> <p>Keziah: well it shows them what's out there so that they're aware of what is around them so it just draws them in to being interested and to caring for things so that hopefully in the future they may want to take some care of the environment and all the wildlife. You can only try and encourage that is, that is the only thing with children that you build on that for the future. (FG 2, pg 8)</p> <p>Keziah: surely, surely it's the very youngest one that you start with and then, then hopefully they can then get that through but a lot of what you find is</p>

	<p>Formative experiences of nature</p> <p>Educating children when young</p> <p>Educating youngsters to show the positives of nature</p> <p>Children wrapped up in cotton wool</p> <p>Loss of opportunities due to health and safety concerns</p> <p>Normal activities in the past are deemed unsafe</p> <p>Society stopping risky behaviours</p> <p>Lost ideas that would lead to NC</p> <p>Encouraging interest at a young age</p> <p>Losing interest if not caught early</p>		<p>that it's usually the infants schools that do it. Errm and it's their choice isn't it? But certainly I.T. does go against that errm and puts it, the world's moving too fast I think. (FG 2, pg 9)</p> <p>Keziah: yeah it all follows through for them and a lot of or quite a few of them when I go to a leavers assembly they actually, there's one or two that go into catering because of that errm because of their interest in, in that with food or into agriculture. And there's been one last year that went to Bloomfield college errm, I know it's only the odd one but that one matters and these are special needs children.</p>
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<p>Naturalistic</p>	<p>Direct contact with nature</p> <p>Contact with green nature</p> <p>Needing access to nature</p> <p>Desire for contact with nature</p> <p>Happy in natural surroundings</p> <p>Active engagement with nature</p> <p>Direct contact with wild nature</p> <p>Thrill of contact with wild nature</p> <p>Contact with new aspects of nature</p> <p>Contact with exciting nature</p> <p>Active involvement with nature</p> <p>Wanting to explore the natural world</p> <p>Easy to feel connected when in nature</p>	<p>Engaging with nature in a natural environment</p>	<p>Keziah: so they actually get to know about the animals and things (FG 2, pg 8)</p> <p>Don: I'd rather have an eagle on me, on me hand than just see two in the bush</p> <p>Keziah: no because that means you've got two in the wild</p> <p>Don: I know but to have, more of a thrill to have it on your arm (FG 2, pg 13)</p> <p>Keziah: well, stroking an animal; that is calming (as long as it doesn't bite you) errm but anything to do with...and close up, being close up to a wild animal is pretty, you know, full on. Errm, seeing them in detail 'cos you see them on television or you see them at a distance and it's nothing like seeing something close up or watching them.</p> <p>BBC documentaries they're great and they're really pretty and they get people watching but again, it's just something they can just watch as they sit on their sofa's; that's their does of nature not go out there it's great it's lovely... if you get out there you'll see a lot more of it and the one thing documentaries are lacking is real fact; it's mainly just pretty pictures and general overview (Ragnar, FG 3, pg 12)</p> <p>I think god, I'd been thrilled to if, 'cos this person is probably 20 years younger than me and I waited another 15 years until I saw one of those, you know (Scarlet, Fg 3 pg 3)</p>
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<p>Naturalistic</p>	<p>Developing NC through your interests</p> <p>Gaining skills from contact with nature</p> <p>Walking in natural surroundings</p> <p>Bringing nature into everyday life</p> <p>Incorporate nature into own experiences</p> <p>Positive contact with nature</p> <p>Tailored natural experiences to the person</p> <p>Teaching others about nature</p> <p>Different nature for different people</p> <p>Pursuing nature based goals</p> <p>Focussed on a challenge</p> <p>Competing with others</p> <p>Enjoying local nature NC developed through interests</p> <p>Enjoyment rather than a chore</p>	<p>Developing a connection to nature through your interests</p>	<p>Don: no I was just about to say, we think that's a nice picture, you could show it to somebody and they think 'it's a picture' and that's all they think, that's all they can see of it. They can't see the beauty of the thing (FG 2, pg 12)</p> <p>Don: I've got a friend and their family they go out frogging, frog watch. Pick the frogs up and put them in the bucket when they cross the road, the majority of them will get run over and they go out each night picking frogs up, taking them to the pond. I mean people they would laugh at them wouldn't they; people think like that don't they to save them. Same like when we're out walking, if you see a buzzard up in the air and err, what do ya call it, sky ten to one, someone would say to me 'Don, have you got that buzzard?' 'cos we don't see many of them (FG 2, pg 17)</p> <p>Don: no it's getting other people together to go with you and spreading it around so it's not just you doing it, you're bringing other people into what you doing and what you like and hopefully you can get a new person come and they'll come again 'cos they've enjoyed it. That's half the battle isn't it; getting people to enjoy it. (FG 2, pg 23)</p> <p>Frank: something new it's, errm it gets your mind you know you won't be bored because your always concentrating on something as your always moving whereas I couldn't sit and just watch for ages 'cos I'd get bored so I'd have to be doing something errm and I learn by being physically active so things like that like zip wiring through trees, climbing trees is quite good stuff like that 'cos your socialising with other people, new subjects, having a laugh with other people just doing stupid things, laughing about accidents, things like that if you're by yourself there's no one to compete with as well 'cos a lot of people like competing; I like competing. Errm, if there's no one to compete with you might do 10 minutes and give up 'cos your bored whereas with someone else they might keep doing it as well. Things like that. (FG 2, pg 28)</p>
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Naturalistic	<p>Caring for nature</p> <p>Learning to love and care for nature</p> <p>Concentration on positive experiences of nature</p> <p>Nature is good for you</p> <p>Nature contact in everyday life</p> <p>Investing time into growing plants</p> <p>Nurturing plants and animals you own</p> <p>Removed from urban living</p> <p>Only connected when surrounded by nature</p> <p>Venturing outdoors</p>	Nurturing the nature you are connected to	<p>Don: well it's an achievement isn't it to set a seed and watch it grow, put it into the garden; it's an achievement.</p> <p>Keziah: well it is yeah, erm, I don't know about nurturing so much on the plant side. Certainly with animals yes but not perhaps so much with plants. There is on growing plants, they're not out in the countryside but if you're growing them for your own garden then yes, you want to see a result. (FG 2, pg 22)</p> <p>Keziah: oh well you look after them and because they need it don't they? 'cos I think humans are the worst thing on this planet for animals. We are the main enemy aren't we at the end of the day. We've done a <i>lot</i> of damage. Errm, we've taken over and pushed them out of their habitats, erm, too many people and too many houses and they've been pushed out of where they should be. So they've had a tough time so I think any help that they get from us is erm, is needed. No I think it's different with animals entirely. Your garden is your own personal pleasure in a way and you want to do the best with that so yeah it is a nurturing thing with your own garden. (FG 2, pg 23)</p>

	Separate entity		
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Biophilic Value	Coding	Theme	Extract
Humanistic	<p>Anthropomorphising animals</p> <p>Seeing our animalistic nature</p> <p>Animals with human traits</p> <p>Emotional attachment alters thoughts</p> <p>Stroking domesticated animals</p> <p>Children want to meet new animals</p> <p>Companionship of nature</p> <p>Pets become too human</p> <p>Pets removed from nature</p> <p>Connected to the pet, not nature</p> <p>Pets removed from the natural order</p> <p>Domestication not natural</p> <p>Pets removed from nature just as animals are</p>	Forming a bond with a non-domesticated animal or 'wild' nature	<p>well, stroking an animal; that is calming (as long as it doesn't bite you) erm but anything to do with...and close up, being close up to a wild animal is pretty, you know, full on (Keziah, FG 2)</p> <p>Someone might think that having a pet cat is being connected but I personally don't feel that way but somebody else might do so I don't know (Mr. Skaba, FG 3)</p> <p>I think cats and dogs are just like, they become like family members; you become very attached...</p> <p>Scarlet: they're an extension of our selves aren't they?</p> <p>Mr. Skaba: and they're part of the household and because they're part of the household, they're not part of nature, they're part of the household but that's just my opinion. (FG 3)</p> <p>probably is but I think a lot of people will say that they're not connected to nature but who have got a pet. But a pet isn't classed as nature in somehow or another, it's on a different plane in a lot of people's minds (Scarlet, FG 3)</p> <p>well it shows them what's out there so that they're aware of what is around them so it just draws them in to being interested and to caring for things so that hopefully in the future they may want to take some care of the environment and all the wildlife</p> <p>Because you do, well personally, I do feel, if you like not alone. And that you are a part of something (Scarlet, FG3, pg 2)</p>

	<p>Human control over nature through breeding</p> <p>Selectively bred animals are removed from nature</p>		<p>I feel that not that I'm on any particular environmental high horse and that but I know that I would if you like feel that half of me was missing if there was no nature you know, and I definitely feel that I'm one of those people that need it (Scarlet, FG 3, pg 6)</p> <p>I would fight for animals, yes, and that is why because Organutans are endangered and in crisis yes I would very much and that's why I adopted two from monkey world and I would fight for, if I could (Keziah, FG 2, pg 16)</p>
Humanistic	<p>Nature as part of the person</p> <p>Commonality between humans and animals</p> <p>Humanity as a part of nature</p> <p>Similarities between nature and humans</p> <p>Blurred lines between nature and humanity</p> <p>No divide</p> <p>Humanity's unique view of nature</p> <p>Nature permeates all</p> <p>At one with nature even in disaster</p> <p>Caring for nature in the long run</p>	Forming a bond with surrounding nature	<p>Because you do, well personally, I do feel, if you like not alone. And that you are a part of something (Scarlet, FG3, pg 2)</p> <p>I feel that not that I'm on any particular environmental high horse and that but I know that I would if you like feel that half of me was missing if there was no nature you know, and I definitely feel that I'm one of those people that need it (Scarlet, FG 3, pg 6)</p> <p>The term nature connectedness when you say it, we've all had different ideas of what it means being part of nature. But I think nature connectedness strangely again I think it's my background, I think of evolutionary inter-relationships like the common ancestral theory, when I see other people or when I see interacting I see them in terms of, you know, group behaviours. When I'm out walking my dogs and see them running I think 'they've all got the same bones as we have, they're from a common ancestral origin' I see nature connectedness in that way of whenever you're outside you can see all these different organisms working together as part of a system. That's what I think of so again it's just a different (Ragnar, FG 3, pg 2)</p> <p>Yeah, yeah I agree totally, in fact I find it very easy to think of myself as sort of a separate entity from, or humans as a separate entity from the world 'cos we're not exactly in equilibrium are we? There's no balance to what we do, we just kind of keep going (Ragnar, FG 3, pg 2)</p> <p>I'd probably be one of the apes, maybe a chimp. I don't know, we're the closest in sort of intelligence level as we kind of conceptualise intelligence</p>

	<p>Nature as a special case</p> <p>Nature and I as one</p> <p>NC is a vital relationship</p> <p>Missing out on nature</p> <p>Lost without NC</p> <p>Nature is a vital part of life</p> <p>Part of nature but nature is not a part of you</p> <p>Not aware you aren't connected to nature</p> <p>Time pressures</p> <p>Focussing on an emotional attachment</p> <p>Connecting is only the start; maintaining is much more difficult</p>		<p>to humans I suppose so yeah that's probably the thing I value the most (Rubin, FG 1, pg 1)</p>
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Biophilic Value	Coding	Theme	Extract
Ecologistic-Scientific	<p>A shared origin in all species</p> <p>Connected to the web of life</p> <p>Removed yet part of the natural order</p> <p>Part of nature yet separate to it</p> <p>Small part of a larger system</p> <p>Abundance of nature</p> <p>Understanding how all life is connected</p> <p>Amazement at the intricacies of life</p> <p>Appreciating the majesty of nature</p> <p>Every day as an opportunity</p> <p>Engaging with the bigger natural picture</p> <p>Using requirements to enjoy natural settings</p>	Seeing how humanity is connected to all of nature	<p>Once you see the communities that live within a bush or a tree, it's not just a tree, it's a whole inter-connected web like nature connectedness. Nature itself is connected to everything else; nothing lives in isolation. Nothing, you can't do it so when you see fungus living on a dead tree, the tree's dead but there's still life coming from it, it's, the fungus is there fulfilling the role you know in what happens to the wood once it's been broken down by the fungus, what about the insects living amongst that, the insect lifecycle continues living on trees which the birds then feed on then something else eats the bird, the bird dies then life just keeps on going and once you can explain to a kid that birth, life, regeneration, death is all connected, is all there, it's happening all the time for some it sparks, it did for me and it affected my entire life once I got my head around that (Ragnar, FG 3, pg 28)</p> <p>But I think nature connectedness strangely again I think it's my background, I think of evolutionary inter-relationships like the common ancestral theory, when I see other people or when I see them interacting I see them in terms of, you know, group behaviours. When I'm out walking my dogs and see them running I think 'they've all got the same bones as we have, they're from a common ancestral origin' I see nature connectedness in that way of whenever you're outside you can see all these different organisms working together as one eco-system (Ragnar, FG 3, pg 3)</p>

	<p>Focussed on the negatives rather than nature's beauty</p> <p>NC from exploring connections within nature</p> <p>Interconnectedness creates wonder</p> <p>Need to find the value within</p> <p>Seeing the bigger picture</p> <p>Taking nature into the home</p> <p>Maintenance is key</p>		
Ecologicistic-Scientific	<p>Exploring natural processes</p> <p>Getting out and indulging natural curiosity</p> <p>Turning love for one species toward realistic action</p> <p>Missed opportunities for connecting</p> <p>Connection through scientific surveying</p> <p>Enjoying scientific enquiry</p>	Exploring nature through deep scientific enquiry	<p>the pond dipping of course we do and we do things sort of connected with trees as a topic. There's all sorts of different aspects, right from going to the 'you can climb this tree, why would this tree be good to climb?' 'oh because it's got low branches', 'but why has it got low branches?' 'because it's this shaped tree' you know, and then collecting the conkers and we still do, do conker fights you know, shhh, health and safety and all the rest but we do do it occasionally the ones and all that sort of thing, the different types of bugs and why the bug is on the oak tree, why is it on the chestnut tree and so forth and that type of thing. (Scarlet, FG 3, pg 25)</p> <p>when they see, most insects look brown until you look at them and then you see that it's got, it's a green shield beetle and it's got little black spots on it or the dots on a ladybird and all this type of thing and the variety that is in one sweep of the net on some of the grass that they, 'cos that's how they start it; 'what can you see?' 'grass' yeah, that's all they can see, that's all I</p>

	<p>Going beyond surface understanding</p> <p>Feeding natural curiosity</p> <p>Contact through curiosity</p> <p>Exposed to scientific wonder of nature</p> <p>Need for hands on interaction</p> <p>Amazing encounters in the smallest spaces</p> <p>Having fun with scientific enquiry</p> <p>So much fun you don't want it to end</p> <p>Thinking about nature through exploration</p> <p>Effort leads to results</p> <p>Overcoming initial fears</p> <p>Using scientific enquiry</p> <p>Move beyond a surface view</p> <p>Vast eco-systems in the smallest of places</p>		<p>can see unless there isn't an obvious butterfly flying around you know, but go deeper and they love it, plus they like it 'cos we tip the stuff onto a white sheet and obviously because they're insects you've got to be quick because they're off! (<i>laughs</i>) even if you want to, we've got those, I don't know what you call them but the glasses with the magnifying glass and stick that over the top... and if you're quick enough, you know, to sort of get a look but yeah, it is it's, and they want to stay longer than whatever time you've got with them , you know they are really keen (Scarlet, FG3, pg 25-26)</p> <p>When you've dug a little bit of the surface it's greater than the sum of its parts because you can appreciate so much more of but only that comes again from everything we've been saying today; spending that little bit of time gives much more back and you need to be able to show people that's how it works I think you'd have a lot more people doing voluntary work or being out and about at weekends whether it's biking or trekking or camping if they could see a little bit more of what's under the surface when they look out the window than just a field and a patch of mud (Ragnar, FG3, pg 40)</p>
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	<p>Seeing the stages of life</p> <p>Work with, think upon and analyse nature</p> <p>Exploring the unknown through science</p> <p>Uncovering nature's mysteries</p> <p>Snapshot of the past</p> <p>Getting a natural 'wow' factor</p> <p>Use one encounter to spawn huge interest</p>		
Ecologicistic-Scientific	<p>School portrayals of nature</p> <p>Well informed</p> <p>Loss of species</p> <p>Need to disseminate what science has found</p> <p>Inspire awe through exposure and education</p> <p>TV portrayals unhelpful</p> <p>Education can be uninspiring</p>	Inspiring a connection through education	<p>Yeah, if you can't just appreciate it, and all you're getting is dry numbers and how bad everything is and how the world is in a mess and need money, if that's the thing that your always exposed to it becomes 'oh well it's just dead' , you get this, just blasé about it (Ragnar, FG 3)</p> <p>all the adverts are on deforestation and the pandas going to die and the leopards going to die but I think people just sometimes need to see the sheer beauty of it and maybe from a shallow level, these are the sort of pictures we had on the classroom walls, like we had amphibians and reptiles and birds and again, just seeing the great variations out there it was just wondrous to a child like me and a few others of my generation. I know a couple of them including myself who have gone on in that sort of mind set through their entire lives and it was just learning about them as a kid and being able to actually go out there and play in amongst it all and sample it for myself that allowed me to develop and build up that knowledge. I think again, because</p>

	<p>Facts relayed</p> <p>Style over substance in documentaries</p> <p>Easy to watch TV than have your own interaction</p> <p>Reluctant to learn, put off through education</p> <p>Making education a fun and rewarding experience</p> <p>Making nature personal, not vocational</p>		<p>kids aren't taken out on field trips they only get the information ploughed into them, it doesn't have the same, not glamour 'cos it's not that it, it doesn't have the same...connectedness (Ragnar, FG 3)</p> <p>I think you've got to start the seed before the kids start to get exposed to all the negative parts of the real world , get them interested, say , explain what an amphibian is, you know here we've got salamanders, newts, toads, you know, show them how these animals fit into the world.</p> <p>They've got this whole beautifully elegant, metamorphic lifestyle that they go through stages, explain to the kids and students how, in second year, how this works and how this fits in and you know, the genes that are involved. It is a whole beautiful system of evolution and you know, just to understand that is a wonderful thing but if you're just told that newt is dying out, give us some money, it doesn't, you're still learning about the newt from a completely different angle (Ragnar, FG 3)</p> <p>they're fascinated the children are with anything; you get the 'ooooh it's a spider' (<i>imitating fear</i>) you know, type thing and if you're confident with whatever creature it is and you can handle it, then invariably they will handle it. There's not any, it's just that they think they should just go 'ooooh it's a spider' you know, and when they see, most insects look brown until you look at them and then you see that it's got, it's a green shield beetle and it's got little black spots on it or the dots on a ladybird and all this type of thing and the variety that is in one sweep of the net on some of the grass that they, 'cos that's how they start it; 'what can you see?' 'grass' yeah, that's all they can see, that's all I can see unless there isn't an obvious butterfly flying around you know, but go deeper and they love it, plus they like it 'cos we tip the stuff onto a white sheet and obviously because they're insects you've got to be quick or they're off! (<i>laughs</i>) even if you want to, we've got those, I don't know what you call them but the glasses with the magnifying glass and stick that over the top (Scarlet, FG 3)</p>
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Biophilic Value	Coding	Theme	Extract
Moralistic	<p>Making a small difference</p> <p>A desire to make a difference</p> <p>Enticing people to volunteer to help</p> <p>Positive feelings are important</p> <p>The difference needs to be tangible</p> <p>Feeling you are making a noticeable difference</p> <p>Reluctance to start</p> <p>Showing progress</p> <p>Seeing a difference is being made</p> <p>Feeling you have made a difference</p> <p>A problem bigger than one person</p> <p>Emphasis placed on ordinary people to make a difference</p>	Getting involved in protecting nature and seeing you have made a difference	<p>I think to get people in the mood to try and make a difference it goes back to everything we were discussing earlier in they need an appreciation of what difference they can make, they need to know that yes they can make a difference but it won't fix it 'cos nothing will ever be fixed because it will always be shifting and we will always be growing, we'll always be moving. I think that's the point rather than letting them get to the position where 'well I'm not making a difference so I'll quit' but let them see that they are actually helping (Ragnar, FG3, pg 36)</p> <p>But it's minimal effort for maximum gain which is essentially what most people are all about, you know, on a fundamental level (Mr. Skaba, FG3)</p> <p>I'm not cynical enough to think that the money isn't going to make any difference otherwise I would've cancelled it, I keep doing it but...I don't know peoples, I suppose it really comes down to your level of commitment to it. You want to think that you are making a difference. You accept a certain amount of corporate involvement and hopefully there will be some tangible outcome at the end of it; however that much is I'm not sure (Mr. Skaba, FG3)</p> <p>by actually being, well by looking after wild animals, rescue centres' that sort of thing. Positively getting out there and helping the wildlife(Keziah, FG 2)</p> <p>the world is just realising now that animals and plants they, they're going, we're losing them aren't we. And they found out now that we've got to do something about it before we've lost them all and it's a big proportion that we're losing (Don, FG 2)</p> <p>We've done a <i>lot</i> of damage. Errm, we've taken over and pushed them out of their habitats, errm, too many people and too many houses and they've</p>

	<p>Need for people to be involved with support of larger organisations</p> <p>Assigning responsibility</p> <p>Expected others to intervene</p> <p>All people need to be involved</p>		<p>been pushed out of where they should be. So they've had a tough time so I think any help that they get from us is erm, is needed (Keziah, FG 2, pg 23)</p> <p>Personally I would rather support English, you know, like the woodland trust so it's improving our environment in England, protecting our species (Scarlet, FG 3, pg 32)</p>
Moralistic	<p>Put off by charity messages</p> <p>Never ending threat to nature</p> <p>Bombarded with negative messages</p> <p>Choice between financial gain and improving NC</p> <p>National bodies can be restrictive</p> <p>Creating natural spaces</p> <p>Charities have a mixed reputation</p> <p>Poor practices</p> <p>Supporting charity does not lead to NC</p> <p>Only interested in certain animals</p>	Charitable giving lowering NC	<p>Mr. Skaba: I think part of that might be because it seems like it's a never ending, I mean it is a never ending cycle and that's the thing that people either fail to grasp or I don't know, maybe get frustrated with because like you say, people might have an awareness or an education on conservation or the charities and things but maybe it's the ongoing aspect of it that the people eventually become disenchanted with. I don't know, some people just so at the point it becomes, it just doesn't have much of an impact anymore because it becomes 'oh, another panda we need to save' and it becomes sort of weakened</p> <p>Ragnar: all the adverts are on deforestation and the pandas going to die and the leopards going to die but I think people just sometimes need to see the sheer beauty of it and maybe from a shallow level, these are the sort of pictures we had on the classroom walls, like we had amphibians and reptiles and birds and again, just seeing the great variations out there it was just wondrous to a child like me and a few others of my generation. I know a couple of them including myself who have gone on in that sort of mind set through their entire lives and it was just learning about them as a kid and being able to actually go out there and play in amongst it all and sample it for myself that allowed me to develop and build up that knowledge. I think again, because kids aren't taken out on field trips they only get the</p>

	<p>Guilt leads to donations</p> <p>Payments ever increasing in size</p> <p>Desire to help only particular nature</p> <p>Donations do matter</p> <p>Charity pushing reduces NC</p> <p>Waste of donations</p> <p>Wasting charity efforts</p> <p>Charity's promoting negative images</p> <p>Using guilt to get others to act</p> <p>Charity's only after money</p> <p>Shallow feeling of action</p> <p>Small commitment, not increasing NC</p>		<p>information ploughed into them, it doesn't have the same, not glamour 'cos it's not that it, it doesn't have the same... (FG 3)</p> <p>this never ending, maybe that's part of the reason why people slowly become disconnected to use the term because of this on-going, seeming lack of a solution because ultimately that's what people really want; they wanna go 'yay we fixed it, they're all fine' but because that never happens. You can only sort of do it for so long before people just become tired of it and somebody else can pick up the slack (Mr. Skaba, FG 3)</p> <p>Mr. Skaba: A lot of the time they've still got that negative angle to them that there is a positive , you hear very little of the successes of any charities that you might, you know, make contributions to because they need to keep driving the angle of things are going wrong , 'cos if you say 'oh it's great now, it's great'</p> <p>Ragnar: 'we've fixed it'</p> <p>Mr. Skaba: you're going to stop giving your money! (<i>laughs</i>)</p> <p>Ragnar: People will stop giving their direct debits</p> <p>Mr. Skaba: Exactly so, it's difficult in a way to create a positive feedback if you like to these people without essentially, to put it bluntly, without scaring them off. (FG 3)</p>
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Moralistic	<p>Revering animals</p> <p>Respecting the nature around you</p> <p>Reverence for nature</p> <p>Valuing and respecting nature</p> <p>Expressing your values through nature</p> <p>Desire to protect nature</p> <p>Protecting nature despite social barriers</p> <p>NC leads to a greater value of nature</p> <p>Altering what is valued</p>	<p>Seeing the value of nature to connect and protect</p>	<p>by the, by the way you behave when you are perhaps out in the countryside. Errr, how you treat the countryside; your respect for it (Keziah, FG 3)</p> <p>Frank: errrm, like experiencing nature itself, so like going on, like camping and things like that so you're actually experiencing nature as itself rather than being, rather than just looking after it, you've gotta be experiencing it by living or by err being around nature itself (2 second pause)</p> <p>Facilitator: any other ideas?</p> <p>Keziah: by actually being, well by looking after wild animals, rescue centres' that sort of thing. Positively getting out there and helping the wildlife (FG 3)</p> <p>the world is just realising now that animals and plants they, they're going, we're losing them aren't we. And they found out now that we've got to do something about it before we've lost them all and it's a big proportion that we're losing (Don, FG 3)</p> <p>with respect to farming, having some responsibility before using chemicals with sprays, things like that 'cos that can have a nasty errm effect on nature (Keziah, FG 3)</p> <p>I think it's very much constructed as it would depend on what you value...because for me, I perceive Derby as being quite rural compared to</p>

			<p>where I'm from, 'cos I'm from down south in Watford which and reasonably close to London then I'm used to things being open for longer hours, public transport being slightly easier to get around, things like that when I go back to Hong Kong even, it's, you know it's even more urbanfied as things are open all night long and things like that. I see those things as positives whereas other people probably see them as negatives errm and I do understand that there are negatives associated with it; levels of pollution are gonna impact on your quality of life things like that as well. But errm, to me, particularly my partner errm, she quite likes rural environments, she likes going for long walks err she has an allotment plot and things like this errm, whereas I don't see as much value in that kind of thing but it's just, I think it's just different perspectives and it's part of the stuff is the values that her parents have passed onto her and her social environment that she's been told, you know that she feels these things are all very, very important as part of life (<i>emphasised</i>) and to quality of life. Errm whereas to me, a lot of the things to do with convenience and more urban living, I kinda prefer so I don't think there is a right or wrong to it, I think there is certainly a wrong if you go too far either way but to an extreme of either way in the same way that you know, all foods, it's kind of a balanced diet is what's advised, you don't stick to one pretty extreme, you know, if you refuse to move from that view, errm, but I think there has to be some level of balance in the world (Rubin, FG1)</p>
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<p>Moralistic</p>	<p>Choice between good and bad</p> <p>Misuse of natural resources</p> <p>Exploiting nature</p> <p>Using nature with disregard</p> <p>Concern of impact to humanity</p> <p>Moral dilemmas</p> <p>Responsible action</p> <p>Learning to act responsibly</p> <p>Good vs. bad judgements</p> <p>Good for humanity, bad for nature</p> <p>Reflecting on actions</p> <p>Harm caused by modern living</p> <p>Irresponsible use of nature</p> <p>Using nature responsibly</p> <p>Loss of nature</p> <p>Societal change in behaviour</p>	<p>Taking responsibility for the harm being caused</p>	<p>Calico: I think it gives you a responsibility because you know what you're doing, you know what your doing can have an affect...but even then with, I've done a lot of environmental campaign work and stuff and from my course and we do that but everyone in my class is still a hypocrite; they all drive, they smoke, they eat meat, it's just like you know, you're educated people who are then going off in the future to teach people this stuff and it doesn't make a difference to you what goes on</p> <p>Mickey: I think it's down to people go well, this is all being done around the world already so what's me not doing it? It's not going to make that much of a change me personally.</p> <p>Mickey: some people think that if I do this what sort of difference will me, as one individual gonna impact on it? So it's about changing that view.</p> <p>yeah so it's, it's a, that's the plan you know, where tigers are dying out and all these animals are needing help it seems to be the angle that everyone seems to be going for, trying to facilitate some sort of connection (Mr. Skaba, FG 3)</p> <p>Calico: but will we when it comes to: 'to do this, this is how I like to be' will people sacrifice the things that they enjoy like hovering the carpet as opposed to using the dustpan and brush?</p> <p>Rubin: I suppose that's, that's one of those elements that we argue is down to our nature and that will we make those choices to make those changes is kind of part of, you know, part and parcel of whether we will be able to make these changes within society or culture as a whole (FG 1)</p> <p>Rubin: but does having a conscience, does that mean we are not a part of nature anymore ?</p> <p>Stersvevier: (<i>laughs</i>) no I don't think it does...</p> <p>Calico: I think it gives you a responsibility because you know what you're doing, you know what your doing can have an affect</p>
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	<p>Altered attitudes and practices</p> <p>Progress over time</p> <p>Forcibly changed</p> <p>Feeling sure before behaviour change</p> <p>Knowledge doesn't mean action</p> <p>Carrying on regardless</p> <p>The wrong way to go about things</p> <p>Practical priorities</p> <p>Values of whole society need to change</p> <p>Small changes are not enough</p> <p>Knowledge is not enough</p> <p>Political changes</p> <p>Environmental politics is unappealing</p> <p>Caring for wildlife</p> <p>Conduct toward the natural world</p>		<p>Rubin: yes on everyone (FG 1)</p> <p>Well, you know, you can see how we do destroy, not just here in England but in your own park or worldwide, you can see how as a species we can destroy and I think we should have to face the responsibility of that (Scarlet, FG 3)</p> <p>Ragnar: Yeah, yeah I agree totally, in fact I find it very easy to think of myself as sort of a separate entity from, or humans as a separate entity from the world 'cos we're not exactly in equilibrium are we? There's no balance to what we do, we just kind of keep going and...</p> <p>Mr. Skaba: Yeah there's no natural balance</p> <p>Ragnar: No, there's no selective pressure to remove humanity completely compared to other life forms so I think that in many ways, if I'm having a particularly bad day, I do end up thinking quite dark thoughts about what people are as I thin again that has helped guide me towards insects as an area of study as they're so well governing that they keep themselves in order. So yeah, nature connectedness is not something I think humans do so well as a species as we tear things up. (FG 3)</p> <p>Calico: I don't think politics is the way to change it as it is not respected by people anymore, not on our kinda generation, maybe older generations</p> <p>Colin: the things is we're all governed we all have governments, every country err has governments whether they are good or bad and it's, if you work at it from the bottom you can do very little but if you work it from the top and feed it down you can do more.</p> <p>Calico: we have legislation for a lot of things but people always love to find loopholes around getting their own way</p>
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	<p>Protecting the endangered</p> <p>Mindful of the harm</p> <p>Negative human impact</p> <p>Industrial threat</p> <p>Harm caused by humanity</p> <p>Desire for nature to be left alone</p> <p>Making up for humanity's mistakes</p> <p>Taking responsibility for harm</p> <p>Dark side of humanity</p> <p>Humanity the destroyer</p> <p>Increased value of nature when connected</p> <p>Human interest vs. natural entitlement</p> <p>Impact our actions have</p> <p>Choice is ours: bad or good</p> <p>Making nature valued</p>		<p>Colin: it's not a thing for individuals in different countries it's a worldwide thing; it affects the world. You know, what we do here affects them in Somalia</p> <p>Rubin: yeah but how, how can you get consensus? There's, there's 'cos the government</p> <p>Colin: well I know how you get consensus</p> <p>Rubin: 'cos the government is supposed to be for the benefit of its own people</p> <p>Colin: Yeah</p> <p>Rubin: if you as the western world go right, OK, we've gone through all of this industrial stuff, you guy's need to stop what you're doing err because it's making the world a really nasty place to live in, we've already done it you know, the rest of the third world is going to go well how about some re-distribution of that wealth where...</p> <p>Colin: exactly, that's it</p> <p>Rubin: you've been selling these industrial components involved in manufacturing that you've given us and shipping it over to you so hold on a minute, so it's, I don't think politics is going to provide a consensus on that, unless there's a massive disaster which someone goes hold on a minute, something really, really bad just happened and then loads of people died (FG 1)</p> <p>well the thing is that we can alter our actions which will alter what happens to the earth. We, we can't do all the things that we've done and not have any affect I mean the reason we have floods in places because we take away the tree's, build things on the floodplains, pushes the water out of other areas so we're, we alter our own environment. We're altering it in this case for the worst but we have the ability to alter it for the better but it's convincing people and getting people to alter the way that we, that they think (Colin, FG 1, pg 35)</p>
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	<p>Focus on nature people adore to benefit all of nature</p> <p>Impacting nature from outside of the system</p> <p>Regret for harm caused</p> <p>Sadness at loss of species</p> <p>Need for meaningful messages promoting value</p> <p>Protecting local nature</p> <p>Setting your own house in order</p> <p>Global effort to effect changes</p> <p>Educating others to reduce harm</p> <p>Tired of constant battles</p>		<p>Well I think if I look back on mine I wouldn't do what I did do and that was bring it all home in jam jars...have it on the shelf, let the tadpoles hatch, well the frogspawn hatch. Maybe out of the thirty/forty that were in the jar you'd get one that managed to develop its legs and eventually that would also snuff it so you know, yes, I have been part of their depreciation I suppose to a degree. The same with newts, where they'd, well it's not there now, mackworth college school, before they built the original school they was loads of ponds up there and they were brilliant newt ponds so again we used to come home with newts in our pockets and stuff you know and that's what we did we were none the wiser that you know, it was going to be a time where you could go to lots and lots of different ponds and never see a newt so in a way I am partly but then at the same time it could be of course a lack of education at the time (Scarlet, FG 3).</p>
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<p>Unknown</p>	<p>An enduring life</p> <p>Positive feelings</p> <p>Nature portrayals in the media</p> <p>Nature is ambiguous</p>	<p>with the purpose of our existence is our species procreating is the point of biology then we should, we ought to be trying to preserve it in a state that we can survive in (Calico, FG 1, pg 35)</p> <p>BBC documentaries they're great and they're really pretty and they get people watching but again, it's just something they can just watch as they sit on their sofa's; that's their does of nature not go out there it's great it's lovely... if you get out there you'll see a lot more of it and the one thing documentaries are lacking is real fact; it's mainly just pretty pictures and general overview but you're not reading a book in a high level on the subject but which people are put off by; they don't want to have to learn (Ragnar, FG 3 pg 11)</p> <p>I find the terms quite erm ambiguous sometimes and I do wonder whether I'm just making it difficult for the sake of it being difficult because we all have this shared understanding of what nature is and as soon as you kind of say being connected to nature, you kind of understand it as being green things and wildlife and tree's and, but the fact that we kind of divide natural things and man made things and separate them and say that these are natural and these are man made...I think it's quite arrogant for us to go well actually things that are made by man we are not going to include them in the division of nature because we are all part of nature as it is and to think that the things that we have created aren't part of the erm that category of nature, kind of, it makes me go well actually well all the stuff that we've created, all the buildings and we have this shared understanding of we look at a building and go that's man made and those tree's over there, that's nature. But the fact that we are a part of nature as well and we've gone on to build those buildings, how, where do you divide that line? You don't look at a dam and go beaver's made, that's beaver made, that's not part of nature (<i>noises of agreement</i>) so we, it seems a bit...</p> <p>Stersvevier: so in other words we all have a different interpretation of what nature is (FG 1, pg 3)</p> <p>I think as well it's how it impacts on youse as a person in terms of if it's sunny and is the leaves are there's birds are singing there's the tree's look</p>
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			<p>nice, how does that make you feel? Make you feel happy or does it have any impact on you at all I suppose (Mickey, FG 1, pg 2)</p>
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Appendix 5.1 Ethics Approval for Study Two and Three

Approval Letter: Psychology Research Ethics Committee

University of Derby

Date: 23rd August 2013

Dr Frances A. Maratos

Chair, Psychology Research Ethics Committee, University of Derby

Dear Ryan,

Ethics Ref No: 091-13-RL

Thank you for submitting this revised application to the Psychology Research Ethics Committee.

I have now reviewed the revised documents you sent following the feedback you received on your initial application, and I am satisfied that all of the issues raised have been dealt with. The application can now therefore be approved.

If any changes to the study described in the application or supporting documentation is necessary, you must notify the committee and may be required to make a resubmission of the application.

Good luck with the study.

Yours sincerely

F. A. Maratos

Dr Frances Maratos

Appendix 5.2 Initial 47 Biophilic Activities Pre-Validation

Value	Activity
Utilitarian	<ol style="list-style-type: none"> 1. Tend to fruit or vegetables that you intend to eat 2. Taken a nature based supplement e.g. fish oil 3. Tended to a plant grown for medicinal use e.g. aloe vera 4. Chosen to wear clothing made of natural fibres e.g. wool, bamboo etc. 5. Caught an animal for the purpose of eating it e.g. fishing, hunting etc.
Naturalistic	<ol style="list-style-type: none"> 1. Gone walking or running in an outdoor, natural environment e.g. in woods, through fields 2. Explored a natural place you have never been to before 3. Tended to a plant that was not for food e.g. a tree or flower 4. Fed an animal that was not a pet or was not livestock you were going to eat 5. Went bird or nature watching for leisure rather than scientific reason's
Ecologicistic-Scientific	<ol style="list-style-type: none"> 1. Thought about how natural organisms are connected e.g. food webs, habitats etc. 2. Learnt more about an insect or other small animal 3. Watched a nature documentary or read a nature book/article 4. Studied nature with some apparatus e.g. a microscope, a nature survey etc. 5. Drew a scientific diagram of nature e.g. the anatomy of an animal a plant cell etc.

Aesthetic	<ol style="list-style-type: none"> 1. Painted a picture of a natural landscape 2. Looked at a physical object depicting a large animal e.g. pictures, ornaments etc. 3. Took a photograph of a natural view e.g. of hills, rivers etc. 4. Watched a sunrise or sunset for more than a minute 5. Went to a natural place just to look at it e.g. visited hills to appreciate the view
Symbollic	<ol style="list-style-type: none"> 1. Had a conversation with others about nature 2. Wondered what it would be like to be another creature 3. Reflected on nature having the ability to communicate e.g. with trees, rivers etc. 4. Thought about magical natural creatures e.g. a unicorn, sprites in woods, nature elementals 5. Thanked or praised nature for what it has given you e.g. Mother Nature
Humanistic	<ol style="list-style-type: none"> 1. Thinking about an animal you know when you're are not with it e.g. at work 2. Saw human qualities in animals e.g. humour, cheekiness 3. Became emotional when in contact with an animal e.g. joy, happiness 4. Went to a pet shop to look at the animals there 5. Stroked your own pet or a pet owned by someone else
Moralistic	<ol style="list-style-type: none"> 1. Actively promoted a nature charity e.g. RSPCA, Woodland Trust etc.

	<ol style="list-style-type: none"> 2. Watched a programme on animal treatment e.g. the great fish fight, intensive farming etc. 3. Thought about the moral treatment of nature e.g. animal welfare, protecting greenbelt land 4. Debated with someone else about the ethical treatment of animals 5. Made an ethical food or product choice e.g. free range eggs
Dominionistic	<ol style="list-style-type: none"> 1. Went rock climbing or caving 2. Competed in an activity with nature e.g. orienteering, field archery 3. Used vehicles in a natural place for sport e.g. quad biking, cross country driving, motocross 4. Visited a zoo 5. Watched or took part in a competitive maritime sport e.g. sailing
Negativistic	<ol style="list-style-type: none"> 1. Stayed inside due to the weather 2. Removed an insect or other small creature from your home e.g. a fly, wasp, spider etc. 3. Stayed in town rather than visiting a local park or green-space 4. Used a computer for leisure rather than playing sport in a green-space 5. Avoided walking through enclosed natural places e.g. through parks with many trees etc.

Appendix 5.3 Combined Information and Consent Form

Thank-you for being interested in taking part in this study investigating the activities people do that involve nature. The study will involve answering questions along with answering 27 statements on how much you take part in and value each activity. In order to take part you need to be over 18 years of age and the questions should take around 20 minutes to complete.

The study is being conducted as part of a PhD thesis by Ryan Lumber (R.Lumber@derby.ac.uk) with the data being used in the thesis write up and possible future publication. The project is under the supervision of Dr. Miles Richardson (M.Richardson@derby.ac.uk) and Prof. David Sheffield (D.Sheffield@derby.ac.uk) at the University of Derby.

The data will be kept for 6 years after the research has been conducted to allow the PhD thesis to be submitted, accepted and published. After 6 years, the data will be destroyed. Only the researcher and supervisors will have access to the data.

At any point during the study and up to 3 weeks from taking part you can request to withdraw. If you choose to withdraw, any data you have contributed will be removed and destroyed. You can do this during the study itself by stopping at any point or by contacting the researcher by phone or email using the contact details provided at the end of this survey pack after completing the study. If you choose to withdraw simply contact the researcher within 3 weeks of taking part.

It is important to ensure the data you provide is kept confidential; to do this a unique identifier code is needed. To create your unique identifier, use the first 3 letters of the month of your birth followed by the last 3 digits of your phone number (e.g. jan123) and enter it here:

If you understand what participating will involve and you are happy to take part please tick here

Appendix 5.4 Questionnaire pack

About You

Age:

Gender: Male Female Other Prefer not to say

Country of residence:

How would you describe your home environment?

Urban Suburban Semi-rural Rural

Do you own a car? Yes No

How do you perceive your everyday access to an environment with trees?

Very poor Poor Ok Good Very good

Engagement with Nature Activities

Please rate the following statements to indicate how often **you do** the activity. There are no right or wrong answers, please write the score in the box for each statement.

1	2	3	4	5	6	7
Never	Less than once a year	At least once year a year	Less than once a month	At least once a month	At least once a week	Daily

- 1. Tending to fruit or vegetables that you intend to eat
- 2. Collecting or chopping wood for fuel
- 3. Catching an animal for the purpose of eating it e.g. fishing, hunting etc.
- 4. Going to a natural place just to look at it e.g. visited hills to appreciate the view
- 5. Going bird or nature watching for leisure rather than scientific reason's
- 6. Enjoying a sensory experience of nature e.g. listening to birdsong, smelling wild flowers etc.

- 7. Studying nature with some apparatus e.g. a microscope, a nature survey, binoculars etc.
- 8. Drawing a scientific diagram of nature e.g. the anatomy of an animal, a plant cell etc.
- 9. Finding out more about an insect or other small animal
- 10. Taking a photograph or painting a picture of a natural view e.g. of hills, rivers etc.
- 11. Watching a sunrise or sunset for more than a minute
- 12. Looking at sculptures or pictures of large animals
- 13. Thinking about the meaning of natural icons e.g. the green man, mother nature etc.
- 14. Using nature to represent an idea
- 15. Thinking deeply about the meaning of signs within nature e.g. the first flowers of spring, the first swallow of summer etc.
- 16. Thinking about an animal you know when you are not with it e.g. at work
- 17. Feeling a deep emotional attachment to wild nature
- 18. Having a conversation with others about your thoughts and feelings about nature
- 19. Thinking about the treatment of nature e.g. animal welfare, protecting greenbelt land
- 20. Being moved by a programme on animal welfare e.g. the great fish fight, intensive farming etc.
- 21. Making ethical food or product choices e.g. free range eggs

- 22. Controlling pests within your garden or other green-space
- 23. Using vehicles in a natural place for sport e.g. quad biking, cross country driving, motocross
- 24. Going rock climbing or caving
- 25. Using a computer for leisure rather than playing sport in a green-space
- 26. Staying in town instead of visiting a local park or green-space
- 27. Avoiding areas of wilderness or woodland

Value of Nature Activities

Thinking about the future, please rate the following statements to indicate how much **you would value** participating in the activity if you had the opportunity. There are no right or wrong answers, please write the score in the box for each statement.

1	2	3	4	5
Not valuable to me	Limited value to me	Average value to me	Valuable to me	Very valuable to me

- 1. Tending to fruit or vegetables that you intend to eat
- 2. Collecting or chopping wood for fuel
- 3. Catching an animal for the purpose of eating it e.g. fishing, hunting etc.

- 4. Going to a natural place just to look at it e.g. visited hills to appreciate the view
- 5. Going bird or nature watching for leisure rather than scientific reason's
- 6. Enjoying a sensory experience of nature e.g. listening to birdsong, smelling wild flowers etc.
- 7. Studying nature with some apparatus e.g. a microscope, a nature survey, binoculars etc.
- 8. Drawing a scientific diagram of nature e.g. the anatomy of an animal a plant cell etc.
- 9. Finding out more about an insect or other small animal
- 10. Taking a photograph or painting a picture of a natural view e.g. of hills, rivers etc.
- 11. Watching a sunrise or sunset for more than a minute
- 12. Looking at sculptures or pictures of large animals
- 13. Thinking about the meaning of natural icons e.g. the green man, mother nature etc.
- 14. Using nature to represent an idea
- 15. Thinking deeply about the meaning of signs within nature e.g. the first flowers of spring, the first swallow of summer etc.

- 16. Thinking about an animal you know when you are not with it e.g. at work
- 17. Feeling a deep emotional attachment to wild nature
- 18. Having a conversation with others about your thoughts and feelings about nature

- 19. Thinking about the treatment of nature e.g. animal welfare, protecting greenbelt land
- 20. Being moved by a programme on animal welfare e.g. the great fish fight, intensive farming etc.

- 21. Making ethical food or product choice e.g. free range eggs

- 22. Controlling pests within your garden or other green-space
- 23. Using vehicles in a natural place for sport e.g. quad biking, cross country driving, motocross
- 24. Going rock climbing or caving
- 25. Using a computer for leisure rather than playing sport in a green-space
- 26. Staying in town instead of visiting a local park or green-space
- 27. Avoiding areas of wilderness or woodland

Experience of Nature in Childhood

Please indicate your level of interaction with nature before you were 11 years old. There are no right or wrong answers, please enter the score in the box provided using the following scale:

1	2	3	4
Never			Often

- 1. Hiking, walking or playing in the woods or natural areas
- 2. Camping
- 3. Hunting or fishing

4. Picking flowers, fruits or vegetables from a garden

5. Planting trees, seeds or plants

6. Taking care of indoor or outdoor plants

Please indicate your participation in the following activities before you were 11 years old, entering Yes (Y) or No (N) in the boxes provided.

1. Had lessons on nature or the environment at school

2. Involved with nature outside of school e.g. attended cubs or brownies

3. Took part in programmes to improve the local environment

With whom did you spend time outdoors prior to the age of 11? Please enter Yes (Y) or No (N) in the boxes provided.

1. Parent or other significant adult

2. Teacher or school group

3. Sibling

4. Friend

Connectedness to Nature Scale

Please answer each of these questions in terms of *the way you feel at the present moment*.

There are no right or wrong answers. Using the following scale, in the box provided next to each question simply state as honestly and candidly as you can what you are presently experiencing.

1	2	3	4	5	6	7
Strongly			Neutral			Strongly
Disagree						Agree

- 1. Right now I'm feeling a sense of oneness with the natural world around me.
- 2. At the moment, I'm feeling that the natural world is a community to which I belong.
- 3. I presently recognize and appreciate the intelligence of other living organisms.

- 4. At the present moment I don't feel connected to nature.
- 5. At the moment, I can imagine myself as part of the larger cyclical process of living.
- 6. At this moment I'm feeling a kinship with animals and plants.
- 7. Right now I feel as though I belong to the Earth just as much as it belongs to me.
- 8. Right now I am feeling deeply aware of how my actions affect the natural world.
- 9. Presently, I feel like I am part of the web of life.
- 10. Right now I feel that all inhabitants of Earth, human and non-human, share a common "life force."
- 11. At the moment I am feeling embedded within the broader natural world, like a tree in a forest.

- 12. When I think of humans' place on Earth right now, I consider them to be the most valuable species in nature.
- 13. At this moment, I am feeling like I am only a part of the natural world around me, and that I am no more important than the grass on the ground or the birds in the trees.
- 14. My personal welfare is independent of the welfare of the natural world

Nature Relatedness Scale

Instructions: For each of the following, please rate the extent to which you agree with each statement, using the scale from 1 to 5 as shown below. Please respond as you really feel, rather than how you think “most people” feel in the box provided.

1	2	3	4	5
Disagree strongly	Disagree a little	Neither disagree or agree	Agree a little	Agree strongly

- 1. I enjoy being outdoors, even in unpleasant weather
- 2. Some species are just meant to die out or become extinct
- 3. Humans have the right to use natural resources any way we want
- 4. My ideal vacation spot would be in a remote, wilderness area
- 5. I always think about how my actions affect the environment
- 6. I enjoy digging in the earth and getting dirt on my hands
- 7. My connection to nature and the environment is a part of my spirituality
- 8. I am very aware of environmental issues
- 9. I take notice of wildlife wherever I am
- 10. I don't often go out in nature
- 11. Nothing I do will change problems in other places on the planet

- 12. I am not separate from nature, but a part of nature
- 13. The thought of being in the woods away from civilisation is frightening
- 14. My feelings about nature do not affect how I live my life
- 15. Animals, birds and plants should have fewer rights than humans
- 16. Even in the middle of a city I notice nature around me
- 17. My relationship to nature is an important part of who I am
- 18. Conservation is unnecessary because nature is strong enough to recover from any human impact
- 19. The state of non-human species is an indicator of the future for humans
- 20. I think a lot about the suffering of animals
- 21. I feel very connected to all living things and the earth

Appendix 5.5 Debrief

Please take this sheet with you

Thank you for taking part in this online study, it is hoped you found it to be an interesting and enjoyable experience. For your reference please write your unique identifier code in the space below. Your code is made up of the first 3 letters of your month of birth and the last 3 digits of your phone number:

During the study you will have answered how often you may have taken part in and would value participating in the nature related activities presented. The activities were chosen as they relate to two theories of how people relate to nature; the Biophilia hypothesis (9 values of how people interact with nature) and Nature Connectedness (thoughts, feelings, personality and experiences of nature).

If you want to know more, the following research would be a good starting point for you:

The Biophilia Hypothesis by Stephen Kellert & Edward Wilson, published by Island Press

Chapter 11 of *Mental Well-Being* by Corey Keynes, published by Springer

It may be the case that you no longer wish to be a part of the research. If this is the case, you can ask for your data to be removed and not included in the study. To do this you can contact the researcher directly within 3 weeks of taking part by phone or email:

Researcher - Ryan Lumber

Email - R.Lumber@derby.ac.uk

Phone - 01332 592131

If you have any further questions about the study you can contact the lead researcher above or email Dr. Miles Richardson (M.Richardson@derby.ac.uk) or Prof. David Sheffield (D.Sheffield@derby.ac.uk). All the data from the study will be kept for six years to allow the thesis to be written and published and then it will be destroyed.

Thank you once again for taking part.

Appendix 6.1 Ethics Approval for Study Four

Approval Letter: Psychology Research Ethics Committee

University of Derby

Date: 14th October 2014

Dr Frances Maratos

Chair, Psychology Research Ethics Committee, University of Derby

Dear Ryan,

Ethics Ref No: 30-14-RL:

Thank you for submitting this application to the Psychology Research Ethics Committee. The application has now been reviewed and was considered at the ethics committee meeting of 14th October 2014.

The following documents have now been reviewed:

1. Ethics application form
2. Briefing Sheet/Consent Form
3. Measures
4. Risk Assessment Form
5. Debrief

The application has been approved and I am attaching a form with feedback from the reviewers (please address that stated in the clarification section).

If any changes to the study described in the application or supporting documentation is necessary, you must notify the committee and may be required to make a resubmission of the application.

Good luck with the study.

Yours sincerely

F.A. Maratos

Dr Frances Maratos

Appendix 6.2 The Number of Participants and Weather Conditions for each Experimental Walk

Date	Time Slot	Condition	Weather	Number of Participants Attending
Thursday 30th October	2-3pm	Built Control	Dry but foggy at times	2
Monday 3rd November	11-12pm	Built Control	Dry, cool and sunny	2
Wednesday 5th November	2-3pm	Nature Activity	Dry , sunny but cold	2
Thursday 6th November	10-11am	Nature Control	Dry , sunny but cold	4
Friday 7th November	10-11am	Nature Control	Mild, Wet	3
Friday 7th November	2-3pm	Built Control	Mild, Wet	2
Monday 10th November	10-11am	Built Control	Dry , sunny but cold	1
Tuesday 11th November	1-2pm	Nature Activity	Wet and windy	3
Thursday 13th November	10-11am	Nature Activity	Cold, windy but dry	9
Friday 14th November	11-12am	Built Control	Wet and windy	1
Monday 17th November	11-12pm	Built Control	Wet and windy	1
Tuesday 18th November	10-11am	Nature Activity	Cold but dry	1
Wednesday 19th November	1-2pm	Nature Activity	Cold, dry slightly windy	6
Monday 24th November	2-3pm	Nature Control	Sunny but cold	2
Thursday 4th December	11-12pm	Nature Control	Dry, cloudy and cold	6
Friday 5th December	11-12pm	Nature Control	Dry, cloudy and cold	2
Tuesday 9th December	2-3pm	Nature Activity	Cold, windy but dry	1
Wednesday 10th December	1-2pm	Nature Activity	Cold, windy, dry and sunny	2
Wednesday 10th December	2-3pm	Built Control	Cold, windy, dry and sunny	1
Friday 23rd January	1-2pm	Built Control	Cold, windy but dry	3
Monday 9th February	1-2pm	Nature Control	Chilly but sunny	4
Wednesday 11th February	1-2pm	Built Control	Overcast and wet	2
Friday 13th February	12-1pm	Built Control	Sunny cold and dry	2
Friday 27th February	11-12pm	Built Control	Sunny and cold	1
Thursday 12th March	1-2pm	Built Control	Gloomy and mild	2
Thursday 19th March	2-3pm	Built Control	Overcast but warm	1
Friday 20th march	10-11am	Built Control	warm, overcast with an eclipse	1

Appendix 6.3 Combined Information and Consent Form

Thank-you for being interested in taking part in this study investigating the use of spaces within the University of Derby. The study will involve answering questions, a researcher guided activity around the university and finally a few more questions that will take around 1 hour to complete. The walk will be across mostly even ground but if you suffer from any mobility issues please do not take part.

The study is being conducted as part of a PhD thesis by Ryan Lumber (R.Lumber@derby.ac.uk) with the data being used in the thesis write up and possible future publication. The project is under the supervision of Dr. Miles Richardson (M.Richardson@derby.ac.uk) and Prof. David Sheffield (D.Sheffield@derby.ac.uk) at the University of Derby.

The data will be kept for 6 years after the research has been conducted to allow the PhD thesis to be submitted, accepted and published. After 6 years, the data will be destroyed. Only the researcher and supervisors will have access to the data at any point.

At any point during the study and up to 3 weeks from taking part you can request to withdraw. If you choose to withdraw, any data you have contributed will be removed and destroyed. You can do this during the study itself by stopping at any point or by contacting the researcher by phone or email using the contact details provided at the end of this survey pack after completing the study. If you choose to withdraw simply contact the researcher within 3 weeks of taking part.

It is important to ensure the data you provide is kept confidential; to do this a unique identifier code is needed. To create your unique identifier, use the first 2 numbers of your address, the first 3 letters of the month of your birth followed by the last 3 digits of your phone number (e.g. 31jan123) and enter it here: _____

We are also interested in following up with you two months from today with a simple questionnaire. If you would be interested in doing this, please write your email address here: _____

If you understand what participating will involve and you are happy to take part please sign and date here: Signature _____ Date: _____

Appendix 6.4 Questionnaire Pack

About You

Age:

Gender: Male Female Other Prefer not to say

Instructions: For each of the following, please rate the extent to which you agree with each statement, using the scale from 1 to 5 as shown below. Please respond as you really feel, rather than how you think “most people” feel in the box provided.

1	2	3	4	5
Disagree strongly	Disagree a little	Neither disagree or agree	Agree a little	Agree strongly

1. I enjoy being outdoors, even in unpleasant weather
2. Some species are just meant to die out or become extinct
3. Humans have the right to use natural resources any way we want
4. My ideal vacation spot would be in a remote, wilderness area
5. I always think about how my actions affect the environment
6. I enjoy digging in the earth and getting dirt on my hands
7. My connection to nature and the environment is a part of my spirituality
8. I am very aware of environmental issues
9. I take notice of wildlife wherever I am
10. I don't often go out in nature
11. Nothing I do will change problems in other places on the planet
12. I am not separate from nature, but a part of nature

- 13. The thought of being in the woods away from civilisation is frightening
- 14. My feelings about nature do not affect how I live my life
- 15. Animals, birds and plants should have fewer rights than humans
- 16. Even in the middle of a city I notice nature around me
- 17. My relationship to nature is an important part of who I am
- 18. Conservation is unnecessary because nature is strong enough to
recover from any human impact
- 19. The state of non-human species is an indicator of the future for humans
- 20. I think a lot about the suffering of animals
- 21. I feel very connected to all living things and the earth

Instructions: We are interested in finding out about the kinds of physical activities that people do as part of their everyday lives. The questions will ask you about the time you spent being physically active in the last 7 days. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport. Think about all the vigorous activities that you did in the last 7 days. Vigorous physical activities refer to activities that take hard physical effort and make you breathe much harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

1. During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling?

_____ days per week

No vigorous physical activities Skip to question 3

2. How much time did you usually spend doing vigorous physical activities on one of those days?

_____ hours per day

_____ minutes per day

Don't know/Not sure

Think about all the moderate activities that you did in the last 7 days. Moderate activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

3. During the last 7 days, on how many days did you do moderate physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis?

Do not include walking.

_____ days per week

No moderate physical activities Skip to question 5

4. How much time did you usually spend doing moderate physical activities on one of those days?

_____ hours per day

_____ minutes per day

Don't know/Not sure

Think about the time you spent walking in the last 7 days. This includes at work and at home, walking to travel from place to place, and any other walking that you have done solely for recreation, sport, exercise, or leisure.

5. During the last 7 days, on how many days did you walk for at least 10 minutes at a time?

_____ days per week

No walking Skip to question 7

6. How much time did you usually spend walking on one of those days?

_____ hours per day

_____ minutes per day

Don't know/Not sure

The last question is about the time you spent sitting on weekdays during the last 7 days. Include time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television.

7. During the last 7 days, how much time did you spend sitting on a week day?

_____ hours per day

_____ minutes per day

Don't know/Not sure

How You Feel Right Now

For each of the following statements please circle how they apply to you and your life at the present time by writing the appropriate number in the box provided:

1	2	3	4	5	6	7
Not at all true						Very true
1.	I feel alive and vitalised					<input type="checkbox"/>
2.	I don't feel very energetic					<input type="checkbox"/>
3.	Sometimes I feel so alive I just want to burst					<input type="checkbox"/>
4.	I have energy and spirit					<input type="checkbox"/>
5.	I look forward to each new day					<input type="checkbox"/>
6.	I nearly always feel alert and awake					<input type="checkbox"/>
7.	I feel energised					<input type="checkbox"/>

Appendix 6.5 Pathway Activity and Built Activity Instructions

Pathway Activity Condition

Biophilic Value	Location	Researcher Direction and Activity
Moralistic (with Aesthetic)	Roof of the multi-faith centre	<p>“The conservation of wildlife and wider nature is important and is something promoted by organisations and charities. What I would like you to do is watch a short video produced by the RSPB on building a home for nature and think about what it means to you”</p> <p>Participants watch the RSPB’s building a home for nature video for 1 minute, 2 seconds http://www.youtube.com/watch?v=DfuFGzHdO_I</p>
Symbolic (with Aesthetic)	Tree/grass area near Astro turf pitch	<p>“Within nature, there a range of symbols within nature that people could use to represent their ideas or for them to indicate seasonal and temporal changes. What I’d like you to do is to look at the nature around us now and to note down in a sentence or two any signs within nature you can see and what it means to you”</p> <p>Participants spend 5 minutes thinking about then noting down the meaning of signs that they can see within nature e.g. first leaves of autumn representing the coming of winter etc.</p>
Humanistic (with Aesthetic)	Koi carp pond near Kedleston road entrance	<p>“We’ve seen and thought about a few different aspects of nature today so what I’d like you to do within the group is share your thoughts about aspects of the nature we’ve seen or you can see currently, and what it means to you emotionally”</p> <p>Participants have a conversation with others about their thoughts and feelings about the nature that can be seen/has been seen for 5 minutes.</p>

Built Activity Condition

Biophilic Value	Location	Researcher Direction and Activity
Moralistic (with Aesthetic)	Reception area of Kedleston road	<p>“The conservation of energy is important and is something promoted by organisations and the government. What I would like you to do is watch the videos played on the university and think about what it means to you”</p> <p>Participants watch the energy monitor near the Kedleston road reception for 1 minute, 2 seconds</p>
Symbolic (with Aesthetic)	Atrium balcony/blends /students union bar	<p>“Within the university campus, there are a range of symbols that people could use to represent their ideas or for them to indicate seasonal and temporal changes. What I’d like you to do is to look at the campus around us now and to note down in a sentence or two any signs within the university you can see and what it means to you”</p> <p>Participants spend 5 minutes thinking about then noting down the meaning of signs that they can see within the university e.g. the presence of students with books indicates assignments are due etc.</p>
Humanistic (with Aesthetic)	Seated sofa area of south tower	<p>“We’ve seen and thought about a few different aspects of the university today so what I’d like you to do within the group is share your thoughts about aspects of the campus we’ve seen or you can see currently, and what it means to you emotionally”</p> <p>Participants have a conversation with others about their thoughts and feelings about aspects of the university that can be seen/has been seen for 5 minutes.</p>

Appendix 6.6 Debrief

Please take this sheet with you

Thank you for taking part in this study that aimed to investigate whether walking whilst engaging with nature via set activities would lead to a positive relationship with nature. This study is following up on recent research that suggests taking part in activities that involve an emotional attachment, symbolic language, conservation of nature and enjoying nature's beauty helps people feel connected with nature. You will have participated in a walk on its own or a walk that contained the above elements either outside the campus in the nature condition or within the campus as part of the built environment in the control condition.

For your reference please write your unique identifier code in the space below. Your code is made up of the first 2 numbers of your house number, the first 3 letters of your month of birth and the last 3 digits of your phone number:

It may be the case that you no longer wish to be a part of the research. If this is the case, you can ask for your data to be removed and not included in the study. To do this you can contact the researcher directly within 3 weeks of taking part by phone or email:

Researcher - Ryan Lumber

Email - R.Lumber@derby.ac.uk

Phone - 01332 592131

If you have any further questions about the study you can contact the lead researcher above or email Dr. Miles Richardson (M.Richardson@derby.ac.uk) or Prof. David Sheffield (D.Sheffield@derby.ac.uk). All the data from the study will be kept for six years to allow the thesis to be written and published and then it will be destroyed.

Thank you once again for taking part.

Appendix 7.1 Ethics Approval for Study Five

Approval Letter: Psychology Research Ethics Committee

University of Derby

Date: 4th August 2015

Dr Frances Maratos

Chair, Psychology Research Ethics Committee, University of Derby

Dear Ryan,

Ethics Ref No: 85-14-RL

Thank you for submitting this revised application to the Psychology Research Ethics Committee.

I have now reviewed the revised documents you sent following the feedback you received on your initial application and my additional comments, and I am satisfied that all of the issues raised have been dealt with. The application can now therefore be approved.

The following documents have now been re-reviewed:

1. Ethics application form
2. Appendices (pgs. 8-28)

If any changes to the study described in the application or supporting documentation is necessary, you must notify the committee and may be required to make a resubmission of the application.

Please note ethical approval for application 85-14-RL is valid for a period of 5 years i.e. 4th August 2020.

Good luck with the study.

Yours sincerely

Frances Maratos

Dr Frances Maratos

Appendix 7.2 Combined Information and Consent Form

Thank-you for being interested in taking part in this study investigating time spent engaging with nature and how this can lead to a connectedness with nature. The study will involve answering some questions that should take no more than 30 minutes to complete and spending 10 minutes each day for the next six days viewing nature and writing short sentences about your experiences. On the final day you will answer the same set of questions again with a follow up questionnaire emailed to you two months after taking part.

The study is being conducted as part of a PhD thesis by Ryan Lumber (R.Lumber@derby.ac.uk) with the data being used in the thesis write up and possible future publication. The project is under the supervision of Dr. Miles Richardson (M.Richardson@derby.ac.uk) and Prof. David Sheffield (D.Sheffield@derby.ac.uk) at the University of Derby.

The data will be kept for a minimum of 6 years after the research has been conducted to allow the PhD thesis to be submitted, accepted and published. After this time, the data will be destroyed. Only the researcher and supervisors will have access to the data at any point.

At any point during the study and up to 3 weeks from taking part you can request to withdraw. If you choose to withdraw, any data you have contributed will be removed and destroyed. You can do this during the study itself by stopping at any point or by contacting the researcher by email (r.lumber@derby.ac.uk) or by phone (01332 592131). If you choose to withdraw simply contact the researcher within 3 weeks of taking part.

It is important to ensure the data you provide is kept confidential; to do this a unique identifier code is needed. To create your unique identifier, use the first 2 numbers of your address, the first 3 letters of the month of your birth followed by the last 3 digits of your phone number (e.g. 31jan123) and enter it here:

If you understand what participating will involve and you are happy to take part please tick here

You will have the opportunity to take part in a prize draw for a £50 Amazon UK voucher once all three stages of the study have been completed. If you would like to take part in this, an option to take part will be provided as part of the follow-up component of the study.

Appendix 7.3 Questionnaire Pack

About You

Age:

Gender: Male Female Other Prefer not to say

Email address (to be sent reminders to take part only):

Instructions: For each of the following, please rate the extent to which you agree with each statement, using the scale from 1 to 5 as shown below. Please respond as you really feel, rather than how you think “most people” feel in the box provided.

1	2	3	4	5
Disagree strongly	Disagree a little	Neither disagree or agree	Agree a little	Agree strongly

- 1. I enjoy being outdoors, even in unpleasant weather
- 2. Some species are just meant to die out or become extinct
- 3. Humans have the right to use natural resources any way we want
- 4. My ideal vacation spot would be in a remote, wilderness area
- 5. I always think about how my actions affect the environment
- 6. I enjoy digging in the earth and getting dirt on my hands
- 7. My connection to nature and the environment is a part of my spirituality
- 8. I am very aware of environmental issues
- 9. I take notice of wildlife wherever I am
- 10. I don't often go out in nature

- 11. Nothing I do will change problems in other places on the planet
- 12. I am not separate from nature, but a part of nature
- 13. The thought of being in the woods away from civilisation is frightening
- 14. My feelings about nature do not affect how I live my life
- 15. Animals, birds and plants should have fewer rights than humans
- 16. Even in the middle of a city I notice nature around me
- 17. My relationship to nature is an important part of who I am
- 18. Conservation is unnecessary because nature is strong enough to recover from any human impact
- 19. The state of non-human species is an indicator of the future for humans
- 20. I think a lot about the suffering of animals
- 21. I feel very connected to all living things and the earth

For each of the following statements please circle how they apply to you and your life at the present time by writing the appropriate number in the box provided:

1	2	3	4	5	6	7
not at all true						very true
						<input type="checkbox"/>
						<input type="checkbox"/>
						<input type="checkbox"/>
						<input type="checkbox"/>
						<input type="checkbox"/>

6. I nearly always feel alert and awake

7. I feel energised

Instructions:

For each of the statements please indicate your level of agreement or disagreement by putting a number in the box provided. Use the scale as shown below:

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

- 1. We are approaching the limit of the number of people the Earth can support
- 2. Humans have the right to modify their natural environment to suit their needs
- 3. When humans interfere with nature, it often produces disastrous consequences
- 4. Human ingenuity will ensure that we do NOT make the Earth unliveable
- 5. Humans are severely abusing the environment
- 6. The Earth has plenty of natural resources if we just learn how to develop them
- 7. Plants and animals have as much right as humans to exist
- 8. The balance of nature is strong enough to cope with the impacts of modern industrialised nations
- 9. Despite our special abilities humans are still subject to the laws of nature
- 10. Human destruction of the natural environment has been greatly exaggerated
- 11. The Earth has only limited room and resources
- 12. Humans are meant to rule over the rest of nature

- 13. The balance of nature is very delicate and easily upset
- 14. Humans will eventually learn enough about how the world works to be able to control it
- 15. If things continue on their present course, we will soon experience a major ecological disaster

Appendix 7.4 Pathway Activity Instructions

Start of Study Instructions:

Each day for the next six days you will be sent an email reminder to take part in the study, asking you to spend 10 minutes every day engaging with nature by viewing it. For our purposes, nature can be any natural environment that includes animals or plants that can be found in towns or cities, in the countryside or further away in wilderness areas. Do not use any substitutes for nature such as virtual scenes, plastic tree's etc.

While you are engaging with nature, please reflect on the following questions and write down your responses. When you have done this, follow the link contained in the email so that you can submit your responses online.

1. How does nature make you feel?
2. What meaning can you see in your own life through nature?
3. Why should nature be cared for or protected?

Reminder Emails:

Hello,

This is a reminder for you to spend 10 minutes today viewing nature and writing your thoughts on the three questions below:

1. How does nature make you feel?
2. What meaning can you see in your own life through nature?

3. Why should nature be cared for or protected?

Remember that nature can be any natural environment that includes animals or plants that can be found in towns or cities, in the countryside or further away in wilderness areas. Do not use any substitutes for nature such as virtual scenes, plastic trees etc.

When you have done, make sure you upload your writing using the following link: [\[link to qualtrics here\]](#)

Many thanks,

Ryan

Reflective Writing Entry on Qualtrics - Pathway Condition

Please enter your unique identifier code here. Your unique identifier is made up of the first 2 numbers of your address, the first 3 letters of the month of your birth followed by the last 3 digits of your phone number (e.g. 31jan123):

Please enter the reflective writing you did today in the boxes below:

1. How does nature make you feel?

2. What meaning can you see in your own life through nature?

3. Why should nature be cared for or protected?

To go after filling in the reflective writing for the first five days of engaging with nature:

Thank you for submitting your thoughts. Please follow the email link tomorrow to submit your next reflections and press submit below to save your responses.

To go after filling in the reflective writing on the sixth day of engaging with nature:

Thank you for submitting your thoughts. Please complete the rest of this survey to complete this stage of the study.

[The measures of nature connectedness, reflection, vitality and pro-environmental attitudes are completed again]

Appendix 7.5 Control Activity Instructions

Start of Study Instructions:

Each day for the next six days you will be sent an email reminder to take part in the study, asking you to spend 10 minutes every day engaging with nature by viewing it. For our purposes, nature can be any natural environment that includes animals or plants that can be found in towns or cities, in the countryside or further away in wilderness areas. Do not use any substitutes for nature such as virtual scenes, plastic tree's etc.

While you are engaging with nature, please reflect on your experience and write down your reflections. When you have done this, follow the link contained in the email so that you can submit your responses online.

Reminder Emails:

Hello,

This is a reminder for you to spend 10 minutes today viewing nature and writing your thoughts on the experience

Remember that nature can be any natural environment that includes animals or plants that can be found in towns or cities, in the countryside or further away in wilderness areas. Do not use any substitutes for nature such as virtual scenes, plastic tree's etc.

When you have done, make sure you upload your writing using the following link: [\[link to qualtrics here\]](#)

Many thanks, Ryan

Reflective Writing Qualtrics Entry - Control Condition

Please enter your unique identifier code here. Your unique identifier is made up of the first 2 numbers of your address, the first 3 letters of the month of your birth followed by the last 3 digits of your phone number (e.g. 31jan123):

Please enter the reflective writing you did today in the box below:

To go after filling in the reflective writing for the first five days of engaging with nature:

Thank you for submitting your thoughts. Please follow the email link tomorrow to submit your next reflections and press submit below to save your responses.

To go after filling in the reflective writing on the sixth day of engaging with nature:

Thank you for submitting your thoughts. Please complete the rest of this survey to complete this stage of the study.

[The measures of nature connectedness, reflection, vitality and pro-environmental attitudes are completed again]

Appendix 7.6 Debrief

Please print screen this page or print it off

Thank you for taking part in this study that was investigating whether engaging with nature via three specific pathways would lead to a positive relationship with nature. This study is following up on recent research that suggests emotion, meaning, compassion and enjoying nature's beauty helps people feel a greater connection with nature. You will have viewed nature for 10 minutes each day and written about your experience either as a free text entry or structured around emotion, meaning and compassion.

For your reference please write your unique identifier code in the space below. Your code is made up of the first 2 numbers of your house number, the first 3 letters of your month of birth and the last 3 digits of your phone number:

It may be the case that you no longer wish to be a part of the research. If this is the case, you can ask for your data to be removed and not included in the study. To do this you can contact the researcher directly within 3 weeks of taking part by email or by phone:

Researcher - Ryan Lumber

Email - R.Lumber@derby.ac.uk

Phone – (01332) 592131

If you have any further questions about the study you can contact the lead researcher above or email Dr. Miles Richardson (M.Richardson@derby.ac.uk) or Prof. David Sheffield (D.Sheffield@derby.ac.uk). All the data from the study will be kept for a minimum of six years to allow the thesis to be written and published and then it will be destroyed.

Thank you once again for taking part.

Appendix 7.7 Two Month Follow-Up Email Invitation

Hello,

Two months ago you took part in a study where you answered some questions and spent 10 minutes in nature each day while writing about your experiences. As it has been two months, you are invited to take part in the final component of the study that consists of answering the same questions as before and offers the chance to win a £50 amazon gift voucher. If you are interested in taking part in this final stage of the research please follow this link [\[link to qualtrics here\]](#)

Best wishes,

Ryan

Appendix 8.1 Key Concepts and Operational Definitions for Coding

Key Concept	Operational Definition
Contact	The act of meeting with nature through the physical senses
Emotion	An affective state or sensation that occurs as a result of engaging with nature
Meaning	Using nature or natural symbolism to communicate a concept that is not directly expressed
Compassion	Extending the self to include nature that leads to a concern for other natural entities that motivates understanding and helping/co-operation
Beauty	The perception of aesthetic qualities including shape, colour and form that please the physical senses

Appendix 8.2 Reflective Writing Data Arranged by Day and Participant Unique Identifier

13feb007

Day 1

1. Today I have walked to work in rain alongside a park with many trees. Work makes me very stressful and somehow I find contentment when looking at the trees. It is very difficult to describe but nature calms me down and gives me the feeling of life.
2. I feel part of nature and feel responsible for doing my best to protect it by either actions or educating others.
3. Nature is part of who we are as humans and vice versa. Nature should be cared for and protected as what would we be without it. Would life in cities of skyscrapers with nowhere natural/earthy to go be satisfying? Probably not! Many people seek rural weekend escapes to free from the every day busy life- it just goes to show what effect nature has on people ie calming effect.

Day 2

1. Today I spend some time with my pet rabbits and shared an apple with them. I do consider my rabbit as "nature" because they are living, breathing creatures just like many other organisms in the world. Spending time with them and sharing my apple with them made me happy and put a smile on my face.

2. Again, I have a feeling of responsibility for nature and i feel the need to look after it. I suppose it makes me feel needed and useful for something. Sharing my love makes me happy.

3. For the purpose of today`s task I have chosen my pet rabbits who I consider to be part of nature. It is vital to look after them, care for and protect them as they are my family, sometimes I refer to them as my babies and as any mum I look after my own dependants. My rabbits, without me, would be so vulnerable that they probably would not survive. It is my job to look after them :)

Day 3

1. Today I spent in time walking to and from work. Weather was very nice, lot sof sunshine especially on the way back from work. Despite having had a very difficult day at work, just walking back whilst being exposed to lots of trees (park aside of my route) and sunshine on my face made me feel a little more positive. It is difficult to describe but looking at nature (trees) and feeling sunshine on my face definitely had a calming effect on me.

2. I do see myself through different lenses one of which is nature, I am part of nature and as previously I feel responsible for nature in general. I see my relationship with nature as a give and take relationship. By this I mean that I look after it and educate others to do so as well and in return make use of it namely to calm me down after a difficult day at work. By doing so, having this sort of relationship, I am bonding with nature.

3. Nature has been found to contribute to people`s well being. / Recently I heard Chris Packham say that in Germany buildings surrounding hospitals have green roofs as this boosts recovery of patients. Green is colour strongly associated with nature which sort of suggests that maybe instead of having green rooftop we should have trees around hospitals instead? In order to accomplish this nature needs to be nurtured, cared for and protected.

Day 4

1. Today during my lunch break I went out for a walk whilst talking on the phone to my partner. Normally I just wonder round different street however today I found myself, needles to say unconsciously, stood outside a small park staring at the trees whilst on the phone for around 40 mins. For some reason I was drawn to the small park but I did not even realise it until afterwards. During the telephone conversation I was very stressed and teary. / Later on that night, when at home, my stress levels arose due to talking about work and I really wanted to go out for a walk in fresh air.

2. Well, from today`s experience I realised that even when I do not think about it and it is totally unconscious I am drawn to nature such as tress when in distress. I have not really though about it in such way but I think that nature is my healer when it comes to difficult situations.

3. As per my notes from yesterday many people find that nature boosts their emotional wellbeing- that is only very small reason why nature should be protected. I think that we- humans- with some much power, possibilities and abilities should protect what is

natural is environment, trees, animals, plants, flowers, insects, mammals, birds, the air, seas, sealife etc I could go on as in reality what would we be without it?

Day 5

1. Today i watered my plans and prepared fresh water for them (boiled it for it to cool down and be used to water the plants). During the process of caring fro my plants I had a sense of responsibility for them. I do see my plants as part of nature- living, breathing organisms.
2. I guess the meaning that I continuously have is being responsible for it and the need to look after it to the best of my ability and educate others to do so as well.
3. Nature is part of who we are as humans, what humanity would be without anything other that lives and breaths, sands, seas, animals etc. The earth would be empty without beautiful, weird and wonderful things to share it with. As we - humans- possess the power to look after it we should before it is too late.

Day 6

1. Today I spent 10 minutes with my rabbits in their enclosure. Up to a point when one of them started to get grumpy I would say I had a nice time. They were very inquisitive checking out my hair whilst tickling me from time to time, and of course they made me giggle. I would say that they (nature) made me feel good and happy.
2. Bonding with nature is very important to me as I am a part of nature. I still see myself as a "voice" for nature that should educate others on safe practices and how to look after nature.
3. Nature is who we are as humans therefore we should look after every aspect of us- not just "self".

Fidec137

Day 1

1. calma and relaxed, in a state of wonder about life. I felt happy to be out wathcing the birds and seeing the great of the plants thinking about growth. Ialso felt inquisitive and wonderus.
2. I felt small like a verysmall part of everything in nature but that I could help some parts of nature that struggled for instance by feeding the birds and using enbionemntally friendly gardneing methods, which adds to my feeligns of self worth. Unlike teh larger things like global warming which although I can reduce how much I use my care I feel I won'thave much effect.
3. Yes nature needs to be cared for and protected form human beings because of our success as a species, although we are part of nature we because we are so successfull we have the power to damage our own enviroment and introduce imbalance that could mean the extinction of many specieis including our own. Thus we need to take care of ares of nature affected by our actions. However changes like climate change occur naturally (where not enhanced by humans) and this natural process will also result in extinction of species and developement of new species. It is sometimes difficult to tell what chagnes are the natural course adn which are due to human influence.

Day 2

1. privileged, that the animal interacted with me, confused about how some people view animals compared to humans. Happy, calm, relaxed.
2. a feeling of connectedness made me feel that I could be liked and help another animal
3. Yes, we need to care for nature within our manmade environment although we must be careful to understand what care is in that context.

Day 2

1. Watched Wood pecker on bird feeder, felt privileged to see a wood pecker, experienced feelings of wonder and amazement at it and its design. Also its ability to remember where the feeders are. Wonder about life and its intricacies and varieties. Also watching nature is a good stress reliever and makes me feel relaxed.
2. feeling joyful and fulfilled in watching nature and having the privilege to share in the space of the amazing other species.
3. Because humans are part of nature, although we believe currently that we other animals are in some way less "conscious" than us, it is likely that they just experience the world in a way through their different senses that is difficult for us to share. As the species with the combination of features which gives them the power to change the world most it is our responsibility to see that our actions do not have a significant detrimental impact on those that we share the planet with.

Day 3

1. wonderful, privileged to be able to spend time in the setting, a bit miserable due to the rain. amazed.
2. Watching nature makes me feel relaxed and I feel it is part of my spirituality that humans are part of the natural world. That we are all connected to the natural world.
3. Nature should be cared for and protected carefully, we need to be careful in deciding how to do this because humans have already changed the environment significantly by altering the landscape and moving species around so careful decisions are needed about what conservation means. // Humans need to take responsibility for the changes they make and the effects it has on the species that are there now.

Day 4

1. calm and in a state of wonder, loving, and in awe
2. A connectedness with other forms of life and a wonder that there are so many different forms of life, including plants that share basic biology with us. Which makes our lives very special indeed.
3. To preserve nature for the future, generations, a feeling of connection is healthy for human beings psychologically at a neurobiological level. Nature also encourages social interaction between people and potentially helps us feel connected to other humans, potentially reducing aggression. Nature is also practically and fundamentally important for food production. thus nature must be cared for for people's psychological and physical wellbeing.

06jun856

Day 1

1. Relaxed and thoughtful
2. The need and will to grow and develop.
3. So that we can continue to explore nature

Day 2

1. Happy as it was sunny
2. To always look on the bright side and try to see the good in all situations whether it be in work or home life
3. Because it is beautiful and it needs to be enjoyed by many

Day 3

1. Insignificant
2. That I am part of a bigger society
3. Because it is self sustaining

Day 4

1. Calm
2. Being able to fight for what I need to survive eg resources
3. So that people always have somewhere to reflect

Day 5

1. Happy
2. The changes in seasons represented the changes in my life
3. So that it can be enjoyed

Day 6

1. Optimistic
2. To travel different paths to see what I can discover
3. For everyone to enjoy

42jan721

Day 1

1. Being outside in my garden made me feel very peaceful. It made me feel very lucky to be surrounded by leaves falling, squirrels running around and birds singing despite the fact that on the other side of my flat is a busy street with noisy cars and people rushing around.
2. I wouldn't usually think of myself as being part of nature although I suppose I am. Being in, and taking time to think about, nature made me feel very appreciative of my quiet surroundings, rich in nature, despite living in suburban London.
3. Because I hope that in years to come when more and more houses have been built and more and more people are walking around we are still able to take time to appreciate and enjoy the changes that come with the seasons, particularly now in Autumn, and still able to watch animals scuttling around without a care.

Day 2

1. Watching my 1 year old enjoy nature made me feel great happiness. Her joy at pointing out birds visiting the bird feeder and squirrels running around gave me great joy and made me very appreciative of my surroundings
2. The meaning I could see in my own life through nature is very much through my children. My one year old taking great joy from being outside even in the rain made me feel that my most important purpose in life is for now is to nurture that innocent enjoyment.
3. So my children and my children's children can continue to experience and enjoy nature in the way that I did when I was young.

Day 3

1. Taking time out of my usual schedule to spend time in nature made me appreciate the calm and quiet surroundings and enabled me to forget about my worries temporarily.
2. I enjoyed being able to switch off from the everyday challenges I have in life and appreciate how lucky I am to lead the life that I do, rather than worrying about more trivial concerns.
3. Because if nature is not protected eventually we will not be able to survive, let alone having the opportunity to appreciate spending time in nature.

Day 4

1. Today's sunny weather made me feel warm and energised and also quite reflective.
2. Watching the leaves fall from the trees and fresh conkers on the ground reminded me of teaching plant life cycles whilst in my earlier job at a primary school. This led me to think

of our human life cycle and that we are not here forever but should make the best of it while we are.

3. In order for the human life cycle to continue so too must those of plants and animals, therefore they should be highly valued and protected.

Day 5

1. Today's time in nature, a walk in the woods, gave me a great sense of escapism, due to the quiet and lack of people and cars rushing around. This calmed me down and reduced my stress levels somewhat.
2. I feel far more free when in touch with nature. It causes me to contemplate the positives in my life and allows me to put in perspective the negatives.
3. Exposure to nature must be beneficial, particularly to those living in cities, not only in the sense of providing fresh air, but in allowing us to escape from our busy and often rushed lives.

Day 6

1. The cold, crisp weather today made me feel like Autumn has really begun and I felt appreciative of the change of season.
2. The last few days spending more time in nature have made me feel very grateful for the position I am in my life, both in terms of where I live, with the benefits of the city nearby and easy access to green spaces and woods where I can escape too; and in terms of having time to think and reflect and realise how lucky I am.
3. Without care for nature and the environment, we would not be able to experience the changing seasons and appreciate the biodiversity that we are surrounded by in this country.

7sep188

Day 1

1. It makes me feel peaceful and content.
2. That we're all part of the circle of life.
3. Without it we would die.

Day 2

1. Calm and peaceful.
2. That everything is connected.
3. Its our duty as higher mammals.

Day 3

1. Happy
2. I am a small part of a big puzzle
3. It is beautiful. We protect famous art so why not nature?

Day 4

1. Thoughtful
2. There's so much we don't know about ourselves and our planet; our full potential is unknown.
3. So that future generations can benefit from it too.

Day 5

1. satisfied
2. Life doesn't need to be so rushed. I should slow down and enjoy the little things
3. Once it's gone everyone will miss it but it could be too late.

Day 6

1. Radiant and healthy
2. Everything happens for a reason
3. It benefits us all in ways we cant all appreciate or don't all realise but we all need it.

40dec708

Day 1

1. I felt calm, relaxed, stress free. I wasn't thinking about all the things I had to get done today. It cleared my mind.
2. I couldn't see a meaning in my life through nature. When spending time in nature, I realised that human life has become very separate from nature, especially living in a city.
3. To sustain habitats for other species. For example I saw a squirrel in a tree which was surrounded by houses and concrete. If the trees were not there, then there wouldn't be any wildlife in cities.

Day 2

1. Very happy, calm, stress free
2. All life is as important as each other,
3. So people who live in big, built up areas still get to experience a little bit of nature, e.g. Parks.

Day 3

1. Relaxed and calm
2. People should make an effort to preserve/conserve nature as we are the ones destroying it
3. Nature is a source of life, and is essential to human life

Day 4

1. It was raining, so it made me feel a little sad
2. To protect nature
3. Because it is a living thing

Day 5

1. Happy, relaxed
2. We should try our best to care for nature
3. certain types of nature e.g. Animals, need other types of nature to survive, therefore it all needs to be protected

Day 6

1. Calm and relaxed
2. We should spend more time in nature
3. It is a part of our lives, we need it for survival just as much as any other living thing does

39nov775

Day 1

1. It made me feel good. It made me feel fresher, happier and free
2. Nature in my life is air from the trees and I like taking photos so it's also an ideal location for taking beautiful photos.
3. Because nature's trees provide us with fresh air and also because nature like a forest or a park can be so refreshing to take a walk in and it is a beautiful sight.

Day 2

1. It made me feel cold but also happy.
2. Trees in nature provide us with air which is an important part of our being.
3. It is beautiful and colourful so we wouldn't be the same / Without it therefore we must care for it.

Day 3

1. It made me feel glad that I live in a house and not in the woods because it was cold outside and wet.
2. Nature to me are trees, trees are forests and forests are beautiful and a way which we gain clean air.
3. Because imagine if we would have no trees then we would have polluted air and would have no leaves and then we wouldn't be able to teach children how the colours of the leaves change with the seasons.

Day 4

1. It made me / Feel relaxed and
2. Nature to me is colours to my eyes and I grew up in a land where there were many trees and a little field where I could play and run around and without that my childhood wouldn't be the same. /
3. Nature should be protected because it provides a home to many wild animals.

Day 5

1. It made me feel chilly and glad that I am a human who can live in a warm house.
2. Nature means the cleanness of oxygen and it means I get to spend my free time taking pretty photos of the trees and the surroundings that represents autumn.
3. Many animals live there and also I certainly couldn't imagine not having trees or forests about... It's also good for finding food for ourselves such as mushrooms, if we destroy them by not caring for them then there will be no mushrooms or wildlife like Deers to look at anymore.

Day 6

1. It made me feel relaxed and like I want to be out here more but it's getting colder so it also made me feel slightly cold.
2. Nature will always mean having clean air and nature means a lot to me because I love animals and going out to where animals like Deers and foxes live and be lucky enough to spot one makes me happy. You can go to a forest and walk around and get loads of fresh air and just embrace nature's beauty.!
3. Many animals have their home in nature which we must care for as we wouldn't want them to come and knock our houses down, and so we shouldn't do it to them as they are

unable to communicate however it's our advantage that we take for granted and turn it evil towards animals by doing things like this... We often don't think about our actions toward nature / Because we assume that we are the most dominant and important creature on earth however in my eyes a dog, a bee or a bird is just as important as us. Bees make honey for example and if we destroy where they live we will not be able to enjoy these perks of animals making things.

18feb759

Day 1

1. it had a calming effect on myself when i was just looking at nature, such as the grass. Although sometimes I found myself thinking about all the things i had to do today, tomorrow this week etc. I enjoyed the quietness, almost serene and felt lazy and felt like just staying there.
2. That I need to organise myself so that I was calm enough as nature. maybe my life will never be as calm as this.
3. so animals and plants have a place to grow in.

Day 2

1. Calm and serene. I felt as if i had nothing to worry about and that life was perfect.
2. That i should make time for other things.
3. That i should make time for other things.

Day 3

1. like the past three days, calm. Happy. But cold at the same time because it was chilly.
2. Nothing this time.
3. For our future generation and the generation after that.

Day4

1. Happy and energetic. I felt like doing something exciting and being crazy.
2. my life is just as exciting
3. Because we are the superior beings and it is our responsibility to give back to nature especially since nature has given human beings so much such as food.

Day 5

1. Calm.
2. Nature ca be random and sometimes unpredictable, as can be life.
3. Because it is beautiful.

Day 6

1. Joyful. Felt like laughing and being active.
2. at times nature (or where I spend time in nature) looks very quiet but if you look closer it is actually very busy. Feel like that's how others see my life.
3. nature can help so many people-make them happy. for some nature is their only food and water source, especially for animals.

15dec541

Day 1

1. Nature always makes me feel very humble. No man could ever make something as simple as some people would say or consider as an ant. When I observe nature I feel overwhelmed by at first glance what seems simple, but is in fact so complicated that I feel at times it is impossible to comprehend. So today I felt amazed and overwhelmed by nature.
2. I do not fully understand the meaning of the wording in this question 'meaning IN your life' but I will try to answer using my best interpretation. Life is a cycle and it changes with time as does nature. A happy life doesn't need to be focused on materialism. Except for modern day humans, life exists through natural elements, for example, some plants can live on sun and water alone. Maybe this could also be said to be true for some humans who totally live off the land.
3. Nature should be cared for and protected because it is through nature that the earth is the inhabitable planet that it is.

Day 2

1. Today nature made me feel like I don't take enough time to appreciate how amazing it is. It helped me to feel relaxed, calm and invigorated. I felt I was breathing deeper and I actually noticed the smell of the plants around me. I live in the heart of a city with a population of 18 million people and I was able to tune out the noise of the traffic and construction work and focus on the movement of the plants and the smell of the vegetation, which made me feel alive.
2. Today I saw the innocence and vulnerability of the vegetation and animals around me. We are all born innocent and vulnerable and society tells how we should behave, which humans all interpret and react to differently. Plants can actually grow stronger by being cut back, which I guess our hair and nails do, but I had never really thought about before. Emotionally and physically when humans and animals are contained or feel suppressed they express themselves in varying ways, plants just seems to get on with it and find a solution to the problem to continue a strong life.
3. Every animal and plant has a purpose and feels feelings. If nature is left to evolve and develop in it's natural surroundings the results are incredible and often beyond belief.

Day 3

1. I watched nature tonight in the dark, I live in a heavily populated city, and it has really amazed me how much nature there is basically on our front door and all around us. I felt that with the movement of the leaves, in my mind, it could nearly be having a human conversation with me and that I could have had a one sided conversation, but would have felt ridiculous because the plants would not have been able to communicate and answer back and probably wouldn't have understood or cared about what I had to say. Although having a conversation when someone (or a living plant in this case) who just listens and doesn't feel the need (rather than can't) to answer back is amazing. This could also be due to something that happened in my past when my mother passed away which I'm not sure I should go into in this study, except to say that the natural movement of plants for me is a very comforting feeling.
2. This question is still really hard for me to understand, but today it's that I don't have to be quiet. Nature is REALLY loud! For me today I heard animals (dogs, birds and wild cats) and insects (cicada's) which are all very loud while communicating messages which I couldn't even begin to understand, it would be amazing to understand what was being

conveyed and expressed. Plant leaves that I observed today with rain drops on the bigger top leaves dropping onto the smaller under leaves is loud! So there is no reason to be quiet if you don't want to be; be as loud as you want and express yourself. Not understanding the communication can be frustrating.

3. Imagine a world with no greenery or natural colours? Or an existence without natural sounds that are made purely for expression and survival and not because it's been told by society that it should sound, express itself or behave in a certain way?

Day 4

1. Today I really noticed that nature is constantly moving. I felt energized and alert as everything I looked at was in motion I was also amazed as I realized how it never really rests. The movement and noises are constant and made me wonder what it must be like to not have to lie down in a quiet, dark room to sleep and feel energized; to be always alert and trying to survive.
2. Life is a cycle from birth through to death. Many plants come from a seed that must burst through its outer shell to let the inside grow, with many lying dormant for years before the environment and natural surroundings are suitable for them to begin their life cycle. This is not the case for humans, when the egg is fertilized we are already in the ideal environment to begin growth whether the mother is ready or not, even though like nature we all start out as an egg or a seed some species in nature have a choice in when to begin their life journey
3. We are all connected and without humans, nature could quite happily carry on and survive and perhaps many would say, thrive. The same cannot be said for the planet earth with only humans and not nature, it has been forecast that humans could not survive without even the simplest creatures such as bees.

Day 5

1. I knew I loved the colours in nature and was amazed today to realize how much I love the colour green. In plants there are so many shades of green, I hadn't really thought of that before. With the differences in colours of nature also comes the variety of shapes and sizes which made me wonder if any human could have thought of it first. The directions that plants grow in, seems at a quick glance to just be, and when you actually look at it, nothing is symmetrical or straight; I love that about nature made me feel a total sense of awe
2. Sometimes the plants look like they seem lonely but also look like they are getting comfort and support from their surroundings, like soil and their roots reaching out to meet other roots. People are like this, they come across as independent but really they want the comfort of others but maybe in ways that others can't see.
3. Because it just should without having to explain or justify it.

Day 6

1. It made me feel alive
2. Nature needs air to breathe just like humans, plants clean the air for us to breathe, where as humans are a cause of much of the earth's pollution
3. A world without nature would be unimaginable

55mar450

Day 1

1. It was very difficult to sit and just enjoy nature as I had a lot on my mind. It made me feel slightly anxious at first just to sit in nature as I felt like I was wasting time, but I did manage to relax slightly and found it very peaceful.
2. I don't think the meaning of my life is connected to nature.
3. Our own survival is dependent on nature surviving which is why it should be cared for.

Day 2

1. I felt very relaxed when I observed nature today. The bird song made me feel very peaceful and less stressed.
2. I could see meaning in co-existing with nature and protecting it; I realised how vulnerable nature can be and how sometimes in our lives we need to protect people and things that can't protect themselves.
3. Nature is the home of many living things, like squirrels and birds, that can't always defend their own home. It needs to be protected for the sake of these animals that can't protect it themselves so that they may survive.

Day 3

1. Nature made me feel very vulnerable; it made me realise how fragile existence can be and how it can very easily be wiped out.
2. I could see meaning in appreciating the little things. I spend a lot of my time rushing and stressing out but today I thought that maybe life could have more meaning if I found happiness in small things.
3. Because humans don't have the right to damage or destroy nature; it has its own life force and we should live alongside it.

Day 4

1. Sitting in nature made me feel slightly trapped by comparison; I noticed how free nature is and it made me realise our own choices are very limited. However it also made me feel ambitious as it made me think that I didn't need to feel trapped, I could make choices to be free.
2. I could see that there doesn't necessarily have to be one meaning to my life but that every moment has its own meaning.
3. Nature gives us an escape from the world and can allow us to see the beauty in things again, even if it weren't vital for our survival it should be protected for that reason.

Day 5

1. I felt very sad in nature today, but I think that was partly due to all the rain. It made me appreciative that I had a house I could go back to to shelter me.
2. I could see meaning in protecting other, just as the trees protected me from the rain.
3. Because it is a beautiful and vulnerable thing that can't protect itself.

Day 6

1. I felt very peaceful and like I should stop stressing about life as much as I do.
2. It made me think that maybe there's more meaning to life than is often believed. That meaning in life shouldn't come through money or success but perhaps simply thinks like just appreciating life.

3. Because it is beautiful and should be appreciated; it isn't the right of humans to destroy or harm it.

12Mar490

Day 1

1. Nature makes me feel in awe of its complexity and grandeur.
2. Plants and animals don't question why they grow or do anything, they just do. They have (as far as I can see) no real conception of time: they don't care for the future, nor get caught up in the past. They just do. Following this example would be a good way of living life.
3. Nature should be cared for and protected for a number of reasons. Firstly, it should be protected because human motives may get in the way of nature without considering the wider impact of their acts. Secondly, it should be protected because we all depend on nature. Finally, it should be protected because without it the world would be grey and soviet.

Day 2

1. Pretty good. The leaves on the trees were continually falling and being blown about in the breeze.
2. That I should remove anything which will be detrimental to my life in order to find better replacements, just like a tree sheds its leaves only to regrow them again in the spring.
3. It should be protected because humans are far too efficient at destroying it.

Day 3

1. Today, I felt ambivalent.
2. I found it quite hard to extrapolate any meaning through nature today.
3. It should be cared for and protected because it cannot actively protect itself, although it will adapt.

Day 4

1. Pretty good. It was nice to see all the leaves falling off the trees.
2. I'm finding it more and more difficult to find new meaning in my life through nature.
3. It should be cared for or protected because it may be destroyed otherwise.

Day 6

1. Quite good, because, even though it was gloomy today, there was still colour in the trees.
2. Things aren't always as bad as they seem. When I looked out the window this morning, it was dark and raining, but it was quite warm and the colours on the trees on the floor were nice.
3. Because we depend on nature just as nature depends on us not to destroy it.

87MAR498

Day 1

1. Impartial today. I was working in a field in damp conditions and strong winds. Felt rather annoyed at being in the cold and damp and not very connected to nature. I did see a dead badger today which made me think what life is about....is it to struggle and survive and eventually die leaving nothing or is there some meaning?
2. Nature provided a way of living today, a sense of achieving some minor tasks and also a sense of dependency on me through my livestock
3. Yes. Its essential. Without nature there is no bio diversity. Nature dies we die. Simple as that!

Day 2

1. relaxed. sun was shining, birds sings, nice warm day. Felt somewhat disconnected from normal hum drum life
2. steady progression....nature is moving as it should as am I
3. Nature is important. It has no less a purpose of existence as do I

Day 3

1. Spent time looking at a chameleon. Amazed at the complexity of its skin structure, rotataing eyes and prehensile tongue
2. The chameleon appeared to be a complex biological being, similar to a person because are also complex
3. Yes. As the major species on the planet which is also the most evolved we have a duty of care to ensure the survival of species for future generations

Day 4

1. Due to stress today I didn't feel part of the nature I was surrounded by, in fact I felt very disconnected and separate from nature today
2. That much of the times the problems in my life are probably more intense than those in the immediate nature I with today
3. Yes. Regardless of personal emotions or problems nature should be protected. Humans problems should be the burden of nature and nor should natures destruction be any answers to an issue or problem of humanity

Day 5

1. Spent time at the sea today, looking out towards the isle of wight. Felt very relaxed due to calm water, mild day and sun shining
2. connection. Thinking about how the earth's surface is predominantly water and thinking that water in the sea that I was looking at could have travelled all around the planet
3. The sea is of major importance to the planet, with this eco system the planet is dead. No water no life. Total extinction without doubt

Day 6

1. Amazed. Despite poor weather the animals I witnessed today just carry on regardless in spite of the conditions. Nothing really seems to stop them or hamper them
2. The same as the animals really, despite bad weather I still have jobs to do and commitments to fullfill so in a way I'm exactly the same as nature, we all have our roles

to do and job to complete although some of mine seem rather minor compared to nature's fight to survive and eat everyday

3. Yes totally. I don't see any reason why we as humans should consider nature's less important for care or protection simply because of our own views. Everything has right to exist and personally I don't see myself as being any more or less important than nature

10jan950

Day 1

1. I let the dogs outside this morning and as I did, I noticed the weather. It was foggy and very cold. It made me feel calm but also lazy. I wanted to spend the day on the sofa in my pyjamas and with a blanket.
2. I didn't really see any meaning
3. Nature makes me feel calm. I enjoy going and finding somewhere pretty to just sit and relax while having a chat with friends and family e.g, picnic

Day 2

1. Nature made me feel cold, and cautious when foggy
2. Nothing
3. Nature can be pretty. Especially trees in Autumn

Day 3

1. Happy, I spent the evening walking with the person I'm closest too. It was raining but I had a really chilled time.
2. The weather was foggy and raining but it didn't put me in a bad mood. I enjoyed it.
3. The environment is pretty. When you go somewhere quiet it allows you to think clearly.

Day 4

1. Peaceful and cold
2. Autumn so change of colours, gets me ready for Christmas
3. To preserve for other generations

Day 6

1. Cold but calm.
2. none
3. For the survival of our species. We need oxygen and food resources

67sep097

Day 1

1. Nature makes me feel good. It makes me feel calm and relaxed.
2. When in nature, it is more of a departure from my life. The calming effect allows for quiet reflection and an opportunity to take a break from the busy urban settings I am used to.
3. On the small scale, it is important that nature is protected because natural places are nice to be in. They are places to take a break from the more hectic urban settings. On the larger scale, it is important to protect nature due to projections that further damage to the environment will have negative consequences for everything.

Day 2

1. Noticing the autumn leaves on the floor makes me realise that the cold winter is coming.
2. The changing appearance of the trees as the cold weather approaches reflects how my own appearance changes to suit the weather.

Day 3

1. Indifferent
2. None
3. Because to not protect nature would have negative consequences for us

Day 4

1. Nature provides me with a relaxed feeling. It feels refreshing compared to dull grey urban landscapes
2. It is important to take breaks from life and enjoy nature
3. It is important that nature is protected as not only does it have important connections to the ongoing sustainability to the world, it is also provides us with pretty, relaxing areas for us to enjoy

Day 6

1. Being in nature made me feel good and refreshed
2. That it is important to take a break and spending time in nature
3. Because it is important for there to be green spaces for us to enjoy

Appendix 8.3 Table of Themes

Theme	Codes
Calm and Restoration from Nature	Calming Effect of Nature Wellbeing Thoughts and Reflection
Emotion	Emotion Positivity
Compassion	Compassion Purity
Meaning	Growth Uncertainty Lack of Meaning
Beauty	Beauty Appreciation
Weather and Seasonal Change	Weather Colour Seasonal Change
Contact	Contact Vitalisation Discovery
Responsibility	Responsibility Personal Gain Environmental Uncertainty Loss Considered Environmental Action Unable to effect pro-environmental change
Connection	Connection Nature as Self Disconnection Equality Need for Nature in own Life A Small Actor in the Grand Scheme of Things Active Relationship Nature as its own Entity

Appendix 8.4 Extracts for Themes

Calm and Restoration from Nature

Calming Effect of Nature

Reference 1 - 0.16% Coverage

1. It is very difficult to describe but nature calms me down

Reference 2 - 0.40% Coverage

2. Many people seek rural weekend escapes to free from the every day busy life- it just goes to show what effect nature has on people ie calming effect.

Reference 3 - 0.26% Coverage

3. looking at nature (trees) and feeling sunshine on my face definitely had a calming effect on me.

Reference 4 - 0.21% Coverage

4. in return make use of it namely to calm me down after a difficult day at work

Reference 5 - 0.55% Coverage

5. During the telephone conversation I was very stressed and teary. / Later on that night, when at home, my stress levels arose due to talking about work and I really wanted to go out for a walk in fresh air.

Reference 6 - 0.05% Coverage

6. calma and relaxed

Reference 7 - 0.04% Coverage

7. calm, relaxed.

Reference 8 - 0.21% Coverage

8. Also watching nature is a good stress releiver and makes me feel relaxed.

Reference 9 - 0.10% Coverage

9. Watching nature makes me feel relaxed

Reference 10 - 0.01% Coverage

10. calm

Reference 11 - 0.06% Coverage

11. Relaxed and thoughtful

Reference 12 - 0.01% Coverage

12. Calm

Reference 13 - 0.14% Coverage

13. Being outside in my garden made me feel very peaceful.

Reference 14 - 0.44% Coverage

14. Taking time out of my usual schedule to spend time in nature made me appreciate the calm and quiet surroundings and enabled me to forget about my worries temporarily.

Reference 15 - 0.50% Coverage

15. I enjoyed being able to switch off from the everyday challenges I have in life and appreciate how lucky I am to lead the life that I do, rather than worrying about more trivial concerns.

Reference 16 - 0.16% Coverage

16. This calmed me down and reduced my stress levels somewhat.

Reference 17 - 0.28% Coverage

17. It causes me to contemplate the positives in my life and allows me to put in perspective the negatives.

Reference 18 - 0.10% Coverage

18. It makes me feel peaceful and content.

Reference 19 - 0.05% Coverage

19. Calm and peaceful.

Reference 20 - 0.22% Coverage

20. Life doesn't need to be so rushed. I should slow down and enjoy the little things

Reference 21 - 0.31% Coverage

21. I felt calm, relaxed, stress free. I wasn't thinking about all the things I had to get done today. It cleared my mind.

Reference 22 - 0.08% Coverage

22. Very happy, calm, stress free

Reference 23 - 0.04% Coverage

23. Relaxed and calm

Reference 24 - 0.02% Coverage

24. relaxed

Reference 25 - 0.05% Coverage

25. Calm and relaxed

Reference 26 - 0.07% Coverage

26. It made me / Feel relaxed

Reference 27 - 0.06% Coverage

27. It made me feel relaxed

Reference 28 - 0.18% Coverage

28. it had a calming effect on myself when i was just looking at nature

Reference 29 - 0.30% Coverage

29. That I need to organise myself so that I was calm enough as nature. maybe my life will never be as calm as this.

Reference 30 - 0.23% Coverage

30. Calm and serene. I felt as if i had nothing to worry about and that life was perfect.

Reference 31 - 0.01% Coverage

31. Calm.

Reference 32 - 0.05% Coverage

Calm and collected

Reference 33 - 0.08% Coverage

Too stressed. need to calm down

Reference 34 - 0.14% Coverage

32. It helped me to feel relaxed, calm and invigorated.

Reference 35 - 0.64% Coverage

33. It was very difficult to sit and just enjoy nature as I had a lot on my mind. It made me feel slightly anxious at first just to sit in nature as I felt like I was wasting time, but I did manage to relax slightly and found it very peaceful.

Reference 36 - 0.29% Coverage

34. I felt very relaxed when I observed nature today. The bird song made me feel very peaceful and less stressed.

Reference 37 - 0.22% Coverage

35. I felt very peaceful and like I should stop stressing about life as much as I do.

Reference 38 - 0.02% Coverage

36. relaxed

Reference 39 - 0.37% Coverage

37. Due to stress today I didn't feel part of the nature I was surrounded by, in fact I felt very disconnected and separate from nature today

Reference 40 - 0.17% Coverage

38. Felt very relaxed due to calm water, mild day and sun shining

Reference 41 - 0.17% Coverage

39. It was foggy and very cold. It made me feel calm but also lazy.

Reference 42 - 0.07% Coverage

40. Nature makes me feel calm.

Reference 43 - 0.02% Coverage

41. Peaceful

Reference 44 - 0.01% Coverage

42. calm.

Reference 45 - 0.09% Coverage

43. It makes me feel calm and relaxed

Reference 46 - 0.14% Coverage

44. When in nature, it is more of a departure from my life

Reference 47 - 0.34% Coverage

45. The calming effect allows for quiet reflection and an opportunity to take a break from the busy urban settings I am used to.

Reference 48 - 0.18% Coverage

46. They are places to take a break from the more hectic urban settings

Reference 49 - 0.11% Coverage

47. Nature provides me with a relaxed feeling.

Reference 50 - 0.15% Coverage

48. It is important to take breaks from life and enjoy nature

Reference 51 - 0.09% Coverage

49. relaxing areas for us to enjoy

Reference 52 - 0.17% Coverage

50. That it is important to take a break and spending time in nature

Wellbeing

Reference 1 - 0.36% Coverage

1. Recently I heard Chris Packham say that in Germany buildings surrounding hospitals have green roofs as this boosts recovery of patients

Reference 2 - 0.33% Coverage

2. I have not really though about it in such way but I think that nature is my healer when it comes to difficult situations.

Reference 3 - 0.33% Coverage

3. many people find that nature boosts their emotional wellbeing- that is only very small reason why nature should be protected

Reference 4 - 0.21% Coverage

4. thus nature must be caredfor for peopels psychological and physical wellbeing.

Reference 5 - 0.52% Coverage

5. Exposure to nature must be beneficial, particularly to those living in cities, not only in the sense of providing fresh air, but in allowing us to escape from our busy and often rushed lives.

Reference 6 - 0.02% Coverage

6. satisfied

Reference 7 - 0.05% Coverage

7. Radiant and healthy

Reference 8 - 0.36% Coverage

8. Because natures trees provide us with fresh air and also because nature like a forest or a park can be so refreshing to take a walk in

Reference 9 - 0.21% Coverage

9. Trees in nature provide us with air which is an important part of our being.

Reference 10 - 0.13% Coverage

10. nature can help so many people-make them happy.

Reference 11 - 0.14% Coverage

11. It helped me to feel relaxed, calm and invigorated.

Reference 12 - 0.61% Coverage

12. This could also be due to something that happened in my past when my mother passed away which I'm not sure I should go into in this study, except to say that the natural movement of plants for me is a very comforting feeling.

Reference 13 - 0.40% Coverage

13. I spend a lot of my time rushing and stressing out but today I thought that maybe life could have more meaning if I found happiness in small things.

Reference 14 - 0.22% Coverage

14. I felt very sad in nature today, but I think that was partly due to all the rain.

Thoughts and Reflection

Reference 1 - 0.13% Coverage

1. So that people always have somewhere to reflect

Reference 2 - 0.03% Coverage

2. Thoughtful

Reference 3 - 0.28% Coverage

3. Although sometimes I found myself thinking about all the things i had to do today, tomorrow this week etc.

Reference 4 - 0.16% Coverage

4. When you go someone quiet it allows you to think clearly.

Reference 5 - 0.34% Coverage

5. The calming effect allows for quiet reflection and an opportunity to take a break from the busy urban settings I am used to.

Emotion

Emotion

Reference 1 - 0.26% Coverage

1. Spending time with them and sharing my apple with them made me happy and put a smile on my face.

Reference 2 - 0.09% Coverage

2. Sharing my love makes me happy.

Reference 3 - 0.51% Coverage

3. Despite having had a very difficult day at work, just walking back whilst being exposed to lots of trees (park aside of my route) and sunshine on my face made me feel a little more positive.

Reference 4 - 0.06% Coverage

4. I am bonding with nature

Reference 5 - 0.08% Coverage

5. I would say I had a nice time.

Reference 6 - 0.49% Coverage

6. They were very inquisitive checking out my hair whilst tickling me from time to time, and of course they made me giggle. I would say that they (nature) made me feel good and happy.

Reference 7 - 0.05% Coverage

7. wonder about life.

Reference 8 - 0.01% Coverage

8. Happy

Reference 9 - 0.14% Coverage

9. Wonder about life and its intericacies and varieities

Reference 10 - 0.34% Coverage

10. feeling joyful and fullfilled in watching nature and having the privilage to share in teh space of the amazing other species.

Reference 11 - 0.11% Coverage

11. in a state of wonder, loving, and in awe

Reference 12 - 0.06% Coverage

12. Happy as it was sunny

Reference 13 - 0.01% Coverage

13. Happy

Reference 14 - 0.07% Coverage

14. So that it can be enjoyed

Reference 15 - 0.06% Coverage

15. For everyone to enjoy

Reference 16 - 0.58% Coverage

16. Watching my 1 year old enjoy nature made me feel great happiness. Her joy at pointing out birds visiting the bird feeder and squirrels running around gave me great joy and made me very appreciative of my surroundings

Reference 17 - 0.86% Coverage

17. The last few days spending more time in nature have made me feel very grateful for the position I am in my life, both in terms of where I live, with the benefits of the city nearby and easy access to green spaces and woods where I can escape too; and in terms of having time to think and reflect and realise how lucky I am.

Reference 18 - 0.02% Coverage

18. Happy

Reference 19 - 0.02% Coverage

19. Happy,

Reference 20 - 0.17% Coverage

20. It made me feel good. It made me feel fresher, happier and free

Reference 21 - 0.10% Coverage

21. It made me feel cold but also happy.

Reference 22 - 0.40% Coverage

22. nature means a lot to me because I love animals and going out to where animals like Deers and foxes live and be lucky enough to spot one makes me happy

Reference 23 - 0.02% Coverage

23. Happy.

Reference 24 - 0.05% Coverage

24. Happy and energetic.

Reference 25 - 0.12% Coverage

25. Joyful. Felt like laughing and being active.

Reference 26 - 0.15% Coverage

26. A happy life doesn't need to be focused on materialism.

Reference 27 - 0.15% Coverage

27. I love that about nature made me feel a total sense of awe

Reference 28 - 0.12% Coverage

28. A world without nature would be unimaginable

Reference 29 - 0.22% Coverage

29. I felt very sad in nature today, but I think that was partly due to all the rain.

Reference 30 - 0.19% Coverage

30. Because it is a beautiful and vulnerable thing that can't protect itself.

Reference 31 - 0.03% Coverage

31. Pretty good.

Reference 32 - 0.07% Coverage

32. Today, I felt ambivalent.

Reference 33 - 0.03% Coverage

33. Pretty good

Reference 34 - 0.03% Coverage

34. Quite good

Reference 35 - 0.04% Coverage

35. Impartial today

Reference 36 - 0.02% Coverage

36. Amazed.

Reference 37 - 0.33% Coverage

37. I enjoy going and finding somewhere pretty to just sit and relax while having a chat with friends and family e.g, picnic

Reference 38 - 0.01% Coverage

38. Happy

Reference 39 - 0.22% Coverage

39. The weather was foggy and raining but it didn't put me in a bad mood. I enjoyed it.

Reference 40 - 0.07% Coverage

40. Nature makes me feel good

Reference 41 - 0.03% Coverage

41. Indifferent

Reference 42 - 0.13% Coverage

42. Being in nature made me feel good and refreshed

Positivity

Reference 1 - 0.03% Coverage

1. Optimistic

Reference 2 - 0.24% Coverage

2. People should make an effort to preserve/conservate nature as we are the ones destroying it

Reference 3 - 0.50% Coverage

3. Things aren't always as bad as they seem. When I looked out the window this morning, it was dark and raining, but it was quite warm and the colours on the trees on the floor were nice.

Compassion

Compassion

Reference 1 - 0.24% Coverage

1. feel responsible for doing my best to protect it by either actions or educating others.

Reference 2 - 0.40% Coverage

2. Again, I have a feeling of responsibility for nature and i feel the need to look after it. I suppose it makes me feel needed and useful for something

Reference 3 - 0.75% Coverage

3. It is vital to look after them, care for and protect them as they are my family, sometimes I refer to them as my babies and as any mum I look after my own dependants. My rabbits, without me, would be so vulnerable that they probably would not survive. It is my job to look after them

Reference 4 - 0.17% Coverage

4. I mean that I look after it and educate others to do so as well

Reference 5 - 0.14% Coverage

5. nature needs to be nurtured, cared for and protected.

Reference 6 - 0.28% Coverage

6. I do not think about it and it is totally unconscious I am drawn to nature such as trees when in distress.

Reference 7 - 0.22% Coverage

7. During the process of caring for my plants I had a sense of responsibility for them.

Reference 8 - 0.26% Coverage

8. Nature is who we are as humans therefore we should look after every aspect of us- not just "self".

Reference 9 - 0.65% Coverage

9. I felt small like a very small part of everything in nature but that I could help some parts of nature that struggled for instance by feeding the birds and using environmentally friendly gardening methods, which adds to my feelings of self worth.

Reference 10 - 0.20% Coverage

10. Connectedness made me feel that I could be liked and help another animal

Reference 11 - 0.48% Coverage

11. Without care for nature and the environment, we would not be able to experience the changing seasons and appreciate the biodiversity that we are surrounded by in this country.

Reference 12 - 0.53% Coverage

12. To sustain habitats for other species. For example I saw a squirrel in a tree which was surrounded by houses and concrete. If the trees were not there, then there wouldn't be any wildlife in cities.

Reference 13 - 0.10% Coverage

13. All life is as important as each other,

Reference 14 - 0.05% Coverage

14. To protect nature

Reference 15 - 0.07% Coverage

15. Because it is a living thing

Reference 16 - 0.31% Coverage

16. certain types of nature e.g. Animals, need other types of nature to survive, therefore it all needs to be protected

Reference 17 - 0.27% Coverage

17. it is beautiful and colourful so we wouldn't be the same / Without it therefore we must care for it.

Reference 18 - 0.20% Coverage

18. Nature should be protected because it provides a home to many wild animals.

Reference 19 - 0.26% Coverage

19. Many animals live there and also I certainly couldn't imagine not having trees or forests about.

Reference 20 - 0.80% Coverage

20. Many animals have their home in nature which we must care for as we wouldn't want them to come and knock our houses down, and so we shouldn't do it to them as they are unable to communicate however it's our advantage that we take for granted and turn it evil towards animals by doing things like this

Reference 21 - 0.13% Coverage

21. so animals and plants have a place to grow in.

Reference 22 - 0.21% Coverage

22. for some nature is their only food and water source, especially for animals.

Reference 23 - 0.47% Coverage

23. Every animal and plant has a purpose and feels feelings. If nature is left to evolve and develop in it's natural surroundings the results are incredible and often beyond belief.

Reference 24 - 0.48% Coverage

24. The same cannot be said for the planet earth with only humans and not nature, it has been forecast that humans could not survive without even the simplest creatures such as bees.

Reference 25 - 0.59% Coverage

25. Nature is the home of many living things, like squirrels and birds, that can't always defend their own home. It needs to be protected for the sake of these animals that can't protect it themselves so that they may survive.

Reference 26 - 0.33% Coverage

26. Because humans don't have the right to damage or destroy nature; it has its own life force and we should live alongside it.

Reference 27 - 0.35% Coverage

27. can allow us to see the beauty in things again, even if it weren't vital for our survival it should be protected for that reason.

Reference 28 - 0.23% Coverage

28. I could see meaning in protecting other, just as the trees protected me from the rain.

Reference 29 - 0.28% Coverage

29. It should be cared for and protected because it cannot actively protect itself, although it will adapt.

Reference 30 - 0.20% Coverage

30. It should be cared for or protected because it may be destroyed otherwise.

Reference 31 - 0.55% Coverage

31. Yes. Regardless of personal emotions or problems nature should be protected. Humans problems should be the burden of nature and nor should natures destruction be any answers to an issue or problem of humanity

Reference 32 - 0.22% Coverage

32. it is important that nature is protected because natural places are nice to be in

Reference 33 - 0.44% Coverage

33. On the larger scale, it is important to protect nature due to projections that further damage to the environment will have negative consequences for everything.

Reference 34 - 0.35% Coverage

34. It is important that nature is protected as not only does it have important connections to the ongoing sustainability to the world,

Purity

Reference 1 - 0.20% Coverage

1. Because imagine if we would have no trees then we would have polluted air

Reference 2 - 0.10% Coverage

2. Nature means the cleanness of oxygen

Reference 3 - 0.11% Coverage

3. Nature will always mean having clean air

Reference 4 - 0.39% Coverage

4. Nature needs air to breathe just like humans, plants clean the air for us to breath, where as humans are a cause of much of the earths pollution

Meaning

Meaning

Reference 1 - 0.11% Coverage

1. I do see myself through different lenses

Reference 2 - 0.45% Coverage

2. I guess the meaning that I continuously have is being responsible for it and the need to look after it to the best of my ability and educate others to do so as well.

Reference 3 - 0.21% Coverage

3. I feel it is part of my spirituality that humans are part of the natural world.

Reference 4 - 0.30% Coverage

4. To always look on the bright side and try to see the good in all situations whether it be in work or home life

Reference 5 - 0.15% Coverage

5. The changes in seasons represented the changes in my life

Reference 6 - 0.70% Coverage

6. The meaning I could see in my own life through nature is very much through my children. My one year old taking great joy from being outside even in the rain made me

feel that my most important purpose in life is for now is to nurture that innocent enjoyment.

Reference 7 - 0.75% Coverage

7. Watching the leaves fall from the trees and fresh conkers on the ground reminded me of teaching plant life cycles whilst in my earlier job at a primary school. This led me to think of our human life cycle and that we are not here forever but should make the best of it while we are.

Reference 8 - 0.12% Coverage

8. I feel far more free when in touch with nature

Reference 9 - 0.11% Coverage

9. That we're all part of the circle of life.

Reference 10 - 0.08% Coverage

10. Everything happens for a reason

Reference 11 - 0.17% Coverage

11. It made me feel good. It made me feel fresher, happier and free

Reference 12 - 0.28% Coverage

12. I get to spend my free time taking pretty photos of the trees and the surroundings that represents autumn.

Reference 13 - 0.42% Coverage

13. at times nature (or where I spend time in nature) looks very quiet but if you look closer it is actually very busy. Feel like that's how others see my life.

Reference 14 - 0.15% Coverage

14. Life is a cycle and it changes with time as does nature.

Reference 15 - 0.58% Coverage

15. Today I saw the innocence and vulnerability of the vegetation and animals around me. We are all born innocent and vulnerable and society tells how we should behave, which humans all interpret and react to differently.

Reference 16 - 1.35% Coverage

16. I felt that with the movement of the leaves, in my mind, it could nearly be having a human conversation with me and that I could have had a one sided conversation, but would have felt ridiculous because the plants would not have been able to communicate and answer back and probably wouldn't have understood or cared about what I had to say. Although having a conversation when someone (or a living plant in this case) who just listens and doesn't feel the need (rather than can't) to answer back is amazing

Reference 17 - 1.60% Coverage

17. today it's that I don't have to be quiet. Nature is REALLY loud! For me today I heard animals (dogs, birds and wild cats) and insects (cicada's) which are all very loud while communicating messages which I couldn't even begin to understand, it would be amazing to understand what was being conveyed and expressed. Plant leaves that I observed today with rain drops on the bigger top leaves dropping onto the smaller under leaves is loud! So there is no reason to be quiet if you don't want to be; be as loud as you want and express yourself. Not understanding the communication can be frustrating.

Reference 18 - 0.51% Coverage

18. The movement and noises are constant and made me wonder what it must be like to not have to lie down in a quiet, dark room to sleep and feel energized; to be always alert and trying to survive.

Reference 19 - 1.49% Coverage

19. Life is a cycle from birth through to death. Many plants come from a seed that must burst through its outer shell to let the inside grow, with many lying dormant for years before the environment and natural surroundings are suitable for them to begin their life cycle. This is not the case for humans, when the egg is fertilized we are already in the ideal environment to begin growth whether the mother is ready or not, even though like nature we all start out as an egg or a seed some species in nature have a choice in when to begin their life journey

Reference 20 - 0.87% Coverage

20. Sometimes the plants look like they seem lonely but also look like they are getting comfort and support from their surroundings, like soil and their roots reaching out to meet other roots. People are like this, they come across as independent but really they want the comfort of others but maybe in ways that others can't see.

Reference 21 - 0.55% Coverage

21. I could see meaning in co-existing with nature and protecting it; I realised how vulnerable nature can be and how sometimes in our lives we need to protect people and things that can't protect themselves.

Reference 22 - 0.54% Coverage

22. I could see meaning in appreciating the little things. I spend a lot of my time rushing and stressing out but today I thought that maybe life could have more meaning if I found happiness in small things.

Reference 23 - 0.39% Coverage

23. Sitting in nature made me feel slightly trapped by comparison; I noticed how free nature is and it made me realise our own choices are very limited.

Reference 24 - 0.66% Coverage

24. However it also made me feel ambitious as it made me think that I didn't need to feel trapped, I could make choices to be free.

25. I could see that there doesn't necessarily have to be one meaning to my life but that every moment has its own meaning.

Reference 25 - 0.11% Coverage

26. Nature gives us an escape from the world

Reference 26 - 0.52% Coverage

27. It made me think that maybe there's more meaning to life than is often believed. That meaning in life shouldn't come through money or success but perhaps simply thinks like just appreciating life.

Reference 27 - 0.73% Coverage

28. Plants and animals don't question why they grow or do anything, they just do. They have (as far as I can see) no real conception of time: they don't care for the future, nor get caught up in the past. They just do. Following this example would be a good way of living life.

Reference 28 - 0.48% Coverage

29. That I should remove anything which will be detrimental to my life in order to find better replacements, just like a tree sheds its leaves only to regrown them again in the spring.

Reference 29 - 0.36% Coverage

30. Nature provided a way of living today, a sense of achieving some minor tasks and also a sense of dependency on me through my livestock

Reference 30 - 0.32% Coverage

31. That much of the times the problems in my life are probably more intense than those in the immediate nature I with today

Growth

Reference 1 - 0.10% Coverage

1. The need and will to grow and develop.

Reference 2 - 0.96% Coverage

2. Plants can actually grow stronger by being cut back, which I guess our hair and nails do, but i had never really thought about before. Emotionally and physically when humans and animals are contained or feel suppressed they express themselves in varying ways, plants just seems to get on with it and find a solution to the problem to continue a strong life.

Reference 3 - 0.34% Coverage

3. However it also made me feel ambitious as it made me think that I didn't need to feel trapped, I could make choices to be free.

Reference 4 - 0.48% Coverage

4. That I should remove anything which will be detrimental to my life in order to find better replacements, just like a tree sheds its leaves only to regrown them again in the spring.

Reference 5 - 0.16% Coverage

5. steady progression....nature is moving as it should as am I

Uncertainty

Reference 1 - 0.17% Coverage

1. Nature ca be random and sometimes unpredictable, as can be life.

Reference 2 - 0.34% Coverage

2. Nature made me feel very vulnerable; it made me realise how fragile existence can be and how it can very easily be wiped out.

Reference 3 - 0.44% Coverage

3. I did see a dead badger today which made me think what life is about....is it to struggle and survive and eventually die leaving nothing or is there some meaning?

Lack of Meaning

Reference 1 - 0.47% Coverage

1. I couldn't see a meaning in my life through nature. When spending time in nature, I realised that human life has become very separate from nature, especially living in a city.

Reference 2 - 0.05% Coverage

2. Nothing this time.

Reference 3 - 0.25% Coverage

3. I do not fully understand the meaning of the wording in this question 'meaning IN your life'

Reference 4 - 0.16% Coverage

4. I don't think the meaning of my life is connected to nature.

Reference 5 - 0.19% Coverage

5. I found it quite hard to extrapolate any meaning through nature today.

Reference 6 - 0.23% Coverage

6. I'm finding it more and more difficult to find new meaning in my life through nature.

Reference 7 - 0.08% Coverage

7. I didn't really see any meaning

Reference 8 - 0.02% Coverage

8. Nothing

Reference 9 - 0.01% Coverage

9. none

Reference 10 - 0.01% Coverage

10. None

Beauty

Beauty

Reference 1 - 0.23% Coverage

1. The earth would be empty without beautiful, weird and wonderful things to share it with

Reference 2 - 0.21% Coverage

2. watching the birds and seeing the growth of the plants thinking about growth.

Reference 3 - 0.37% Coverage

3. Watched Wood pecker on bird feeder, felt privileged to see a wood pecker, experienced feelings of wonder and amazement at it and its design.

Reference 4 - 0.15% Coverage

4. Because it is beautiful and it needs to be enjoyed by many

Reference 5 - 0.17% Coverage

5. still able to watch animals scuttling around without a care.

Reference 6 - 0.20% Coverage

6. let alone having the opportunity to appreciate spending time in nature.

Reference 7 - 0.15% Coverage

7. It is beautiful. We protect famous art so why not nature?

Reference 8 - 0.66% Coverage

8. I like taking photos so it's also an ideal location for taking beautiful photos.
9. Because nature's trees provide us with fresh air and also because nature like a forest or a park can be so refreshing to take a walk in and it is a beautiful sight.

Reference 9 - 0.27% Coverage

10. it is beautiful and colourful so we wouldn't be the same / Without it therefore we must care for it.

Reference 10 - 0.28% Coverage

11. Nature to me are trees ,trees are forests and forests are beautiful and a way which we gain clean air.

Reference 11 - 0.28% Coverage

12. I get to spend my free time taking pretty photos of the trees and the surroundings that represents autumn.

Reference 12 - 0.26% Coverage

13. You can go to a forest and walk around and get loads of fresh air and just embrace nature's beauty.!

Reference 13 - 0.06% Coverage

14. Because it is beautiful.

Reference 14 - 0.46% Coverage

15. I watched nature tonight in the dark, I live in a heavily populated city, and it has really amazed me how much nature there is basically on our front door and all around us.

Reference 15 - 0.15% Coverage

16. Today I really noticed that nature is constantly moving

Reference 16 - 0.94% Coverage

17. With the differences in colours of nature also comes the variety of shapes and sizes which made me wonder if any human could have thought of it first. The directions that plants grow in, seems at a quick glance to just be, and when you actually look at it, nothing is symmetrical or straight; I love that about nature made me feel a total sense of awe

Reference 17 - 0.35% Coverage

18. can allow us to see the beauty in things again, even if it weren't vital for our survival it should be protected for that reason.

Reference 18 - 0.13% Coverage

19. Because it is beautiful and should be appreciated

Reference 19 - 0.16% Coverage

20. Nature makes me feel in awe of its complexity and grandeur.

Reference 20 - 0.15% Coverage

21. It was nice to see all the leaves falling off the trees.

Reference 21 - 0.19% Coverage

22. even though it was gloomy today, there was still colour in the trees.

Reference 22 - 0.23% Coverage

23. Amazed at the complexity of its skin structure, rotataing eyes and prehensile tongue

Reference 23 - 0.13% Coverage

24. Nature can be pretty. Especially trees in Autumn

Reference 24 - 0.07% Coverage

25. The environment is pretty.

Reference 25 - 0.22% Coverage

26. it is important that nature is protected because natural places are nice to be in

Reference 26 - 0.09% Coverage

27. it is also provides us with pretty

Appreciation

Reference 1 - 0.23% Coverage

1. Today nature made me feel like I don't take enough time to appreciate how amazing it is

Reference 2 - 0.13% Coverage

2. Because it is beautiful and should be appreciated

Weather and Seasonal Change

Weather

Reference 1 - 0.71% Coverage

1. Weather was very nice, lot sof sunshine especially on the way back from work. Despite having had a very difficult day at work, just walking back whilst being exposed to lots of trees (park aside of my route) and sunshine on my face made me feel a little more positive.

Reference 2 - 0.09% Coverage

2. a bit miserable due to the rain.

Reference 3 - 0.06% Coverage

3. Happy as it was sunny

Reference 4 - 0.21% Coverage

4. Today's sunny weather made me feel warm and energised and also quite reflective

Reference 5 - 0.33% Coverage

5. The cold, crisp weather today made me feel like Autumn has really begun and I felt appreciative of the change of season.

Reference 6 - 0.13% Coverage

6. It was raining, so it made be feel a little sad

Reference 7 - 0.10% Coverage

7. It made me feel cold but also happy.

Reference 8 - 0.27% Coverage

8. It made me feel glad that I live in a house and not in the woods because it was cold outside and wet.

Reference 9 - 0.21% Coverage

9. It made me feel chilly and glad that I am a human who can live in a warm house.

Reference 10 - 0.16% Coverage

10. it's getting colder so it also made me feel slightly cold.

Reference 11 - 0.13% Coverage

11. But cold at the same time because it was chilly

Reference 12 - 0.22% Coverage

12. I felt very sad in nature today, but I think that was partly due to all the rain.

Reference 13 - 0.23% Coverage

13. The leaves on the trees were continually falling and being blown about in the breeze.

Reference 14 - 0.19% Coverage

14. even though it was gloomy today, there was still colour in the trees.

Reference 15 - 0.50% Coverage

15. Things aren't always as bad as they seem. When I looked out the window this morning, it was dark and raining, but it was quite warm and the colours on the trees on the floor were nice.

Reference 16 - 0.39% Coverage

16. I was working in a field in damp conditions and strong winds. Felt rather annoyed at being in the cold and damp and not very connected to nature

Reference 17 - 0.11% Coverage

17. sun was shining, birds sings, nice warm day

Reference 18 - 0.17% Coverage

18. Felt very relaxed due to calm water, mild day and sun shining

Reference 19 - 0.80% Coverage

19. Despite poor weather the animals I witnessed today just carry on regardless in spite of the conditions. Nothing really seems to stop them or hamper them

20. The same as the animals really, despite bad weather I still have jobs to do and commitments to fullfill so in a way I'm exactly the same as nature

Reference 20 - 0.06% Coverage

21. I noticed the weather

Reference 21 - 0.07% Coverage

22. It was foggy and very cold

Reference 22 - 0.13% Coverage

23. Nature made me feel cold, and cautious when foggy

Reference 23 - 0.35% Coverage

24. It was raining but I had a really chilled time.

25. The weather was foggy and raining but it didn't put me in a bad mood. I enjoyed it.

Reference 24 - 0.01% Coverage

26. cold

Reference 25 - 0.01% Coverage

27. Cold

Reference 26 - 0.34% Coverage

28. The changing appearance of the trees as the cold weather approaches reflects how my own appearance changes to suit the weather.

Colour

Reference 1 - 0.42% Coverage

1. Green is colour strongly associated with nature which sort of suggests that maybe instead of having green rooftop we should have trees around hospitals instead

Reference 2 - 0.09% Coverage

2. Nature to me is colours to my eyes

Reference 3 - 0.68% Coverage

3. Imagine a world with no greenery or natural colours? Or an existence without natural sounds that are made purely for expression and survival and not because it's been told by society that it should sound, express itself or behave in a certain way?

Reference 4 - 0.50% Coverage

4. I knew I loved the colours in nature and was amazed today to realize how much I love the colour green. In plants there are so many shades of green, I hadn't really thought of that before.

Reference 5 - 0.24% Coverage

5. Finally, it should be protected because without it the world would be grey and soviet.

Reference 6 - 0.19% Coverage

6. even though it was gloomy today, there was still colour in the trees.

Reference 7 - 0.50% Coverage

7. Things aren't always as bad as they seem. When I looked out the window this morning, it was dark and raining, but it was quite warm and the colours on the trees on the floor were nice.

Reference 8 - 0.15% Coverage

8. Autumn so change of colours, gets me ready for christmas

Reference 9 - 0.16% Coverage

9. It feels refreshing compared to dull grey urban landscapes

Seasonal Change

Reference 1 - 0.25% Coverage

1. we are still able to take time to appreciate and enjoy the changes that come with the seasons,

Reference 2 - 0.33% Coverage

2. The cold, crisp weather today made me feel like Autumn has really begun and I felt appreciative of the change of season.

Reference 3 - 0.08% Coverage

3. experience the changing seasons

Reference 4 - 0.49% Coverage

4. we would have no trees then we would have polluted air and would have no leaves and then we wouldn't be able to teach children how the colours of the leaves change with the seasons.

Reference 5 - 0.13% Coverage

5. Nature can be pretty. Especially trees in Autumn

Reference 6 - 0.15% Coverage

6. Autumn so change of colours, gets me ready for christmas

Reference 7 - 0.23% Coverage

7. Noticing the autumn leaves on the floor makes me realise that the cold winter is coming.

Reference 8 - 0.34% Coverage

8. The changing appearance of the trees as the cold weather approaches reflects how my own appearance changes to suit the weather.

Contact

Contact

Reference 1 - 0.06% Coverage

1. I went out for a walk

Reference 2 - 0.16% Coverage

2. staring at the trees whilst on the phone for around 40 mins.

Reference 3 - 0.25% Coverage

3. For some reason I was drawn to the small park but I did not even realise it until afterwards.

Reference 4 - 0.14% Coverage

4. i watered my plants and prepared fresh water for them

Reference 5 - 0.12% Coverage

5. privilaged, that the animal interacted with me

Reference 6 - 0.42% Coverage

6. Being in, and taking time to think about, nature made me feel very appreciative of my quiet surroundings, rich in nature, despite living in suburban London.

Reference 7 - 0.31% Coverage

7. a walk in the woods, gave me a great sense of escapism, due to the quiet and lack of people and cars rushing around.

Reference 8 - 0.27% Coverage

8. So people who live in big, built up areas still get to experience a little bit of nature, e.g. Parks.

Reference 9 - 0.09% Coverage

9. We should spend more time in nature

Reference 10 - 0.44% Coverage

10. I grew up us having a land where there were many trees and a little field where I could play and run around and without that my childhood wouldn't be the same. /

Reference 11 - 0.07% Coverage

11. I want to be out here more

Reference 12 - 0.26% Coverage

12. You can go to a forest and walk around and get loads of fresh air and just embrace nature's beauty.!

Reference 13 - 0.24% Coverage

13. I enjoyed the quietness, almost serene and felt lazy and felt like just staying there.

Reference 14 - 0.12% Coverage

14. Joyful. Felt like laughing and being active.

Reference 15 - 0.89% Coverage

15. I felt I was breathing deeper and I actually noticed the smell of the plants around me. I live in the heart of a city with a population of 18 million people and I was able to tune out the noise of the traffic and construction work and focus on the movement of the plants and the smell of the vegetation, which made me feel alive.

Reference 16 - 0.46% Coverage

16. I watched nature tonight in the dark, I live in a heavily populated city, and it has really amazed me how much nature there is basically on our front door and all around us.

Reference 17 - 0.52% Coverage

17. Or an existence without natural sounds that are made purely for expression and survival and not because it's been told by society that it should sound, express itself or behave in a certain way?

Reference 18 - 0.29% Coverage

18. I felt very relaxed when I observed nature today. The bird song made me feel very peaceful and less stressed.

Reference 19 - 0.09% Coverage

19. Spent time looking at a chameleon

Reference 20 - 0.18% Coverage

20. Spent time at the sea today, looking out towards the isle of wight.

Reference 21 - 0.33% Coverage

21. I enjoy going and finding somewhere pretty to just sit and relax while having a chat with friends and family e,g, picnic

Reference 22 - 0.16% Coverage

22. I spent the evening walking with the person I'm closest too.

Vitalisation

Reference 1 - 0.05% Coverage

1. Happy and energetic.

Reference 2 - 0.22% Coverage

2. I felt like doing something exciting and being crazy.
3. my life is just as exciting

Reference 3 - 0.34% Coverage

4. I felt energized and alert as everything I looked at was in motion I was also amazed has I realized how it never really rests.

Reference 4 - 0.06% Coverage

5. It made me feel alive

Responsibility

Responsibility

Reference 1 - 0.23% Coverage

1. As we - humans- possess the power to look after it we should before it is too late.

Reference 2 - 0.32% Coverage

2. I still see myself as a "voice" for nature that should educate others on safe practices and how to look after nature.

Reference 3 - 0.27% Coverage

3. Yes nature needs to be cared for and protected form human beings because of our success as a species,

Reference 4 - 0.63% Coverage

4. because we are so successful we have the power to damage our own environment and introduce imbalance that could mean the extinction of many species including our own. Thus we need to take care of areas of nature affected by our actions.

Reference 5 - 0.37% Coverage

5. Yes, we need to care for nature within our manmade environment although we must be careful to understand what care is in that context.

Reference 6 - 0.62% Coverage

6. As the species with the combination of features which gives them the power to change the world most it is our responsibility to see that our actions do not have a significant detrimental impact on those that we share the planet with.

Reference 7 - 0.31% Coverage

7. Humans need to take responsibility for the changes they make and the affects it has on the species that are there now.

Reference 8 - 0.12% Coverage

8. To preserve nature for the future, generations

Reference 9 - 0.34% Coverage

9. So my children and my children's children can continue to experience and enjoy nature in the way that I did when I was young.

Reference 10 - 0.21% Coverage

10. Because if nature is not protected eventually we will not be able to survive,

Reference 11 - 0.38% Coverage

11. In order for the human life cycle to continue so too must those of plants and animals, therefore they should be highly valued and protected.

Reference 12 - 0.08% Coverage

12. It's our duty as higher mammals.

Reference 13 - 0.11% Coverage

13. We should try our best to care for nature

Reference 14 - 0.42% Coverage

14. Because we are the superior beings and it is our responsibility to give back to nature especially since nature has given human beings so much such as food.

Reference 15 - 0.17% Coverage

15. Because it just should without having to explain or justify it.

Reference 16 - 0.14% Coverage

16. it isn't the right of humans to destroy or harm it.

Reference 17 - 0.53% Coverage

17. Nature should be cared for and protected for a number of reasons. Firstly, it should be protected because human motives may get in the way of nature without considering the wider impact of their acts.

Reference 18 - 0.20% Coverage

18. It should be protected because humans are far too efficient at destroying it.

Reference 19 - 0.20% Coverage

19. Because we depend on nature just as nature depends on us not to destroy it.

Reference 20 - 0.40% Coverage

20. Yes. As the major species on the planet which is also the most evolved we have a duty of care to ensure the survival of species for future generations

Reference 21 - 0.39% Coverage

21. The same as the animals really, despite bad weather I still have jobs to do and commitments to fulfill so in a way I'm exactly the same as nature

Personal Gain

Reference 1 - 0.16% Coverage

1. Being able to fight for what I need to survive eg resources

Reference 2 - 0.06% Coverage

2. Without it we would die.

Reference 3 - 0.14% Coverage

3. So that future generations can benefit from it too.

Reference 4 - 0.24% Coverage

4. It benefits us all in ways we can't all appreciate or don't all realise but we all need it.

Reference 5 - 0.27% Coverage

5. So people who live in big, built up areas still get to experience a little bit of nature, e.g. Parks.

Reference 6 - 0.49% Coverage

6. It's also good for finding food for ourselves such as mushrooms,if we destroy them by not caring for them then there will be no mushrooms or wildlife like Deers to look at anymore.

Reference 7 - 0.35% Coverage

7. Bees make honey for example and if we destroy where they live we will not be able to enjoy these perks of animals making things.

Reference 8 - 0.15% Coverage

8. For our future generation and the generation after that.

Reference 9 - 0.06% Coverage

So others can enjoy it.

Reference 10 - 0.33% Coverage

9. Nature should be cared for and protected because it is through nature that the earth is the inhabitable planet that it is.

Reference 11 - 0.23% Coverage

10. Our own survival is dependent on nature surviving which is why it should be cared for.

Reference 12 - 0.17% Coverage

11. Secondly, it should be protected because we all depend on nature.

Reference 13 - 0.26% Coverage

12. Yes. Its essential. Without nature there is no bio diversity. Nature dies we die. Simple as that!

Reference 14 - 0.09% Coverage

13. To preserve for other generations

Reference 15 - 0.18% Coverage

14. For the survival of our species. We need oxygen and food resources

Reference 16 - 0.19% Coverage

15. Because to not protect nature would have negative consequences for us

Reference 17 - 0.18% Coverage

16. Because it is important for there to be green spaces for us to enjoy

Environmental Uncertainty

Reference 1 - 0.78% Coverage

1. However changes like climate change occur naturally (where not enhanced by humans) and this natural process will also result in extinction of species and development of new species. It is sometimes difficult to tell what changes are the natural course and which are due to human influence.

Reference 2 - 0.37% Coverage

2. Yes, we need to care for nature within our manmade environment although we must be careful to understand what care is in that context.

Loss

Reference 1 - 0.17% Coverage

1. Once it's gone everyone will miss it but it could be too late.

Reference 2 - 0.49% Coverage

2. we would have no trees then we would have polluted air and would have no leaves and then we wouldn't be able to teach children how the colours of the leaves change with the seasons.

Reference 3 - 0.36% Coverage

3. The sea is of major importance to the planet, with this eco system the planet is dead. No water no life. Total extinction without doubt

Considered Action

Reference 1 - 0.76% Coverage

1. Nature should be cared for and protected carefully, we need to be careful in deciding how to do this because humans have already changed the environment significantly by altering the landscape and moving species around so careful decisions are needed about what conservation means.

Reference 2 - 0.58% Coverage

2. It made me feel very lucky to be surrounded by leaves falling, squirrels running around and birds singing despite the fact that on the other side of my flat is a busy street with noisy cars and people rushing around.

Unable to Effect Pro-Environmental Change

Reference 1 - 0.35% Coverage

1. Unlike the larger things like global warming which although I can reduce how much I use my car I feel I won't have much effect.

Connection

Connection

Reference 1 - 0.70% Coverage

1. I think that we- humans- with some much power, possibilities and abilities should protect what is natural is environment, trees, animals, plants, flowers, insects, mammals, birds, the air, seas, sealife etc I could go on as in reality what would we be without it?

Reference 2 - 0.08% Coverage

2. although we are part of nature

Reference 3 - 0.16% Coverage

3. feeling of connected ness made me feel that I could be liked

Reference 4 - 0.16% Coverage

4. wonderous, privlaged to be able to spend time in the setting

Reference 5 - 0.13% Coverage

5. That we are all connected to the nateural world.

Reference 6 - 0.53% Coverage

6. A connectedness with other forms of life and a wonder that there are so many different forms of life, including plants that share basic biology with us. Which makes our lives very special indeed.

Reference 7 - 0.65% Coverage

7. a feeling of connectionis healthy for human beings psycholoically at a neurobioloical level. Nature also encourages social interation between people and potentially helps us feel connected to other humans , potentially reducing aggression.

Reference 8 - 0.09% Coverage

8. That I am part of a bigger society

Reference 9 - 0.08% Coverage

9. That everything is connected.

Reference 10 - 0.31% Coverage

10. certain types of nature e.g. Animals, need other types of nature to survive, therefore it all needs to be protected

Reference 11 - 0.34% Coverage

11. We are all connected and without humans, nature could quite happily carry on and survive and perhaps many would say, thrive. The

Reference 12 - 0.14% Coverage

12. Felt somewhat disconnected from normal hum drum life

Reference 13 - 0.46% Coverage

13. connection. Thinking about how the earth's surface is predominantly water and thinking that water in the sea that I was looking at could have travelled all around the planet

Nature as Self

Reference 1 - 0.36% Coverage

1. Nature is part of who we are as humans, what humanity would be without anything other that lives and breaths, sands, seas, animals etc.

Reference 2 - 0.19% Coverage

2. Bonding with nature is very important to me as I am a part of nature.

Reference 3 - 0.26% Coverage

3. Nature is who we are as humans therefore we should look after every aspect of us- not just "self".

Reference 4 - 0.17% Coverage

4. confused about how some people view animals compared to humans.

Reference 5 - 0.66% Coverage

5. Because humans are part of nature, although we belive currently that we other animals are in some why less "conciuous" than us, it is likely that they just experience the world in a way through their different sences that is difficult for us share.

Reference 6 - 0.22% Coverage

6. I wouldn't usually think of myself as being part of nature although I suppose I am

Reference 7 - 0.16% Coverage

7. Nature is a source of life, and is essential to human life

Reference 8 - 0.25% Coverage

8. It is a part of our lives, we need it for survival just as much as any other living thing does

Disconnection

Reference 1 - 0.37% Coverage

1. Due to stress today I didn't feel part of the nature I was surrounded by, in fact I felt very disconnected and separate from nature today

Equality

Reference 1 - 0.54% Coverage

1. We often don't think about our actions toward nature / Because we assume that we are the most dominant and important creature on earth however in my eyes a dog, a bee or a bird is just as important as us.

Reference 2 - 0.18% Coverage

2. Nature is important. It has no less a purpose of existence as do I

Reference 3 - 0.27% Coverage

3. The chameleon appeared to be a complex biological being, similar to a person because are also complex

Reference 4 - 0.39% Coverage

4. The same as the animals really, despite bad weather I still have jobs to do and commitments to fulfill so in a way I'm exactly the same as nature

Reference 5 - 0.66% Coverage

5. I don't see any reason why we as humans should consider nature's less important for care or protection simply because of our own views. Everything has right to exist and personally I don't see myself as being any more or less important than nature

Need for Nature in Own Life

Reference 1 - 0.22% Coverage

1. Would life in cities of skyscrapers with nowhere natural/earthy to go be satisfying?

Reference 2 - 0.25% Coverage

2. It is a part of our lives, we need it for survival just as much as any other living thing does

Reference 3 - 0.10% Coverage

3. Nature in my life is air from the trees

Reference 4 - 0.11% Coverage

4. That I should make time for other things.

A Small Actor in the Grand Scheme of Things

Reference 1 - 0.04% Coverage

1. Insignificant

Reference 2 - 0.09% Coverage

2. I am a small part of a big puzzle

Reference 3 - 0.91% Coverage

3. Nature always makes me feel very humble. No man could ever make something as simple as some people would say or consider as an ant. When I observe nature I feel overwhelmed by at first glance what seems simple, but is in fact so complicated that I feel at times it is impossible to comprehend. So today I felt amazed and overwhelmed by nature.

Reference 4 - 0.38% Coverage

4. we all have our roles to do and job to complete although some of mine seem rather minor compared to natures fight to survive and eat everyday

Active Relationship

Reference 1 - 0.18% Coverage

1. I see my relationship with nature as a give and take relationship.

Reference 2 - 0.17% Coverage

2. appreciative that I had a house I could go back to to shelter me.

Reference 3 - 0.23% Coverage

3. I could see meaning in protecting other, just as the trees protected me from the rain.

Nature as its Own Entity

Reference 1 - 0.08% Coverage

1. Because it is self sustaining

Reference 2 - 0.34% Coverage

2. When spending time in nature, I realised that human life has become very separate from nature, especially living in a city.

Reference 3 - 0.57% Coverage

3. Except for modern day humans, life exists through natural elements, for example, some plants can live on sun and water alone. Maybe this could also be said to be true for some humans who totally live off the land.

Exploration

Exploration/Investigation

Reference 1 - 0.11% Coverage

1. So that we can continue to explore nature

Reference 2 - 0.14% Coverage

2. To travel different paths to see what I can discover

Reference 3 - 0.25% Coverage

3. There's so much we don't know about ourselves and our planet; our full potential is unknown.