Ecopsychology: The Relationship Between Green Space and General Well-being

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Abstract

The use of green space has gained favourable attention within psychology academia for influencing general well-being in a positive manner. However, due to the rapid implementation of urbanisation across various sectors, the relationship between humans and nature is under threat. Thus, the expansion of urbanisation impedes the potentially beneficial elements of green space for general well-being. A correlative analysis was conducted to examine the relationship between green space and general well-being. Data was collected using two 5-point Likert scales, the 14-item Connectedness to Nature Scale (CNS) and the 14-item Scales of General Well-being (SGWB), which was statistically analysed. Based on 20 samples, a weak, positive correlation ($r = 0.3$) was found. This indicated that green space tends to influence general well-being in a positive direction. However, based on the high SGWB scores, it is plausible that the participants' general well-being may be correlated with other variables. The contribution of this research added the existing body of knowledge in the developing field of ecopsychology, thus promoting discussions in mainstream psychology.

Contents

Introduction

Contextualisation

The presence of green space, such as parks and gardens, is increasingly viewed as a health promoting factor of residential environments (Beyer, Kaltenbach, Szabo, Bogar, Nieto & Malecki, 2014). Health benefits linked to green space include mental fatigue recovery, stress reduction, improved psychological well-being and better self-reported health (Beyer et al., 2014). Due to the rise in mental health related illness, green space is gaining attention as an alternative means of providing relief and therapy for affected individuals (Beyer et al., 2014). However, the process of urbanisation poses a threat to this relationship. Over fifty percent of the global population reside in urban environments and as a result, individuals spend increasing amounts of time indoors in relation to leisure and work (Navarro, Olivos and Fleury-Bahi, 2017). Furthermore, Navarro et al (2017) estimates that humans spend ninety percent of their lives within buildings or urban environments. This creates a disconnection from nature or green spaces and their beneficial properties. Thus, urbanisation acts as a buffer between nature and humans (Beyer et al., 2014).

The value of green space for improving human health and well-being has gained increasing academic attention (Wood, Harsant, Dallimer, Cronin de Chavez, McEachan and Hassall, 2018). From wilderness therapy intervention programmes (Sidenius et al., 2015), to small plants for reducing daily office stress (Toyoda et al., 2020) and views of greenery promoting positive mental states (Groenewegen et al., 2006). These nature-based interventions mentioned above are known as ecotherapy. Ecotherapy interventions aim to utilise the properties of nature in various forms for improving human health and well-being (Beyer et al., 2014). Thus, many aspects of interaction with green space is recognised as a compelling tool for improving health and well-being (Wood et al., 2018).

In light of the above, the purpose of this research is to explore the relationship between green space and general well-being. The field of ecopsychology advocates the benefit associated with time spent/ access to nature, such as improvements in mood, health and general well-being. In order to study this relationship, a positivist approach is employed to quantitatively measure and determine if a correlation exists between green space and general well-being. Furthermore, the PERMA model (Seligman, 2011), a theory of well-being will be used to inform the study. The literature will focus on one's inherit connection to nature, demonstrate the positive correlation between green space and well-being, and illustrate the practical application of nature-based therapy. Therefore the literature that will inform

this study aims to highlight the crucial relationship between green space and general well-being.

Rationale

The prevalence of mental health related illness continues to expand and become a leading problem in human health and well-being (Farmer, 2014). Traditional methods of treatment for mental health rely heavily on the consumption of medication (Farmer, 2014). Individuals depend on public health services for treatment which is not always sustainable for long term use. Nature-based therapy or ecotherapy is an emerging field within psychology as an alternative method for health and well-being promotion (Farmer, 2014). Ecotherapy relies on the interplay between humans and the natural environment. Hence, urban development creates a buffer between humans and nature, disrupting the connection between the two (Larson et al., 2016). Therefore ecopsychology advocates the use and development of green spaces as a means of prompting general well-being as an alternative treatment (Farmer, 2014).

Problem Statement

Over fifty percent of the global population reside in urban environments, and this continues to expand rapidly (Larson, Jennings & Cloutier, 2016). The process of urbanization is blindly consumed by society, powered by the need for economic and industrial growth. However the implications of urbanization consist of varying factors. On the one hand, urban populations have greater access to societal amenities (Larson et al., 2016). As the authors go on to say, on the other hand, urbanization cultivates a variety of environmental, social and psychological effects which impacts human health and well-being (Larson et al., 2016). The majority of urban development does not incorporate environmentally conscious practices (Larson et al., 2016). Thus, with urban expanse comes environmental destruction and separation. Research conducted indicates that the presence of green spaces, such as nature reserves, parks, forests and sports fields positively correlate with health promoting characteristics (Beyer et al., 2014). These range from stress reduction, mental fatigue recovery, improved self-reported health and reduced aggression and violence. Therefore, it can be said that urban expansion and development threatens the beneficial aspects of green spaces.

Purpose Statement

The value of green space for general well-being is gaining favourable attention in academia (Beyer et al., 2014). This can be seen from ecotherapy and wilderness therapy intervention programmes (Sidenius, Stigsdotter & Refshauge, 2015), to small plants for reducing office stress (Toyoda, Yokota,

Barnes & Kaneko, 2020) and views of greenery relating to positive health outcomes (Groenewegen, van den Berg, de Vries & Verheij, 2006). Thus various elements of interaction with green spaces are being recognised as an effective approach for improving general well-being. Furthermore Wood et al (2018) propose that access to residential green space allows mental fatigue of modern life to be negated by psychological restoration. Therefore, the purpose of the study is to illustrate a positive correlation between green space and general well-being.

Research Question

What is the relationship between general well-being and residential green spaces?

Research Hypothesis

General well-being is positively correlated with time spent in green space.

Literature Review

Conceptualisation

Urbanisation refers to the transformation of semi-natural and natural environments in urban and peri-urban areas by means of impermeable surfaces (Klimanova, Kolbowsky & Illarionova, 2018). For the purpose of this research, it is understood that urbanisation facilitates the separation between humans and nature, potentially negating the beneficial factors associated with the natural environment.

According to Larson, Jennings and Cloutier (2016), green space refers to a category of land cover that includes public or residential parks and other public or private vegetated areas. These green spaces provide ecosystem services that facilitate human welfare, such as physical health, heat reducing effects, air and water pollution regulation and mental health (Larson et al., 2016). Green space serves as the independent variable and one's connection to it and is measured through the 14-item Connectedness to Nature Scale (Mayer & Frantz, 2004).

Well-being comprises of happiness and life satisfaction (hedonic well-being) and fulfilment, functioning and life purpose (eudaimonic well-being) (Houlden, Weich, Porto de Albuquerque, Jarvis & Rees, 2018). Therefore it is a multidimensional aspect of positive mental health, reflecting the absence of mental distress, with the ability to cope well with life stressors (Houlden et al., 2018). For the purpose of this research, well-being serves as the dependent variable and one's level of it and is measured through the 14-item Scales of General Well-being (Longo, Coyne, & Joseph, 2017).

Bragg, Wood and Barton (2013) states that ecotherapy consist of nature-based interventions in varying natural settings. Ecotherapy initiatives consist of facilitated, specific intervention for an individual. This approach is therapeutic in nature although may include formal therapy (counselling, cognitive behavioural therapy and psychotherapy) in order to form an integrated intervention (Bragg et al., 2013). Ecotherapy illustrates the practical implementation of an alternative nature-based intervention over traditional psychological interventions.

The field of ecopsychology involves the study of the relationship between humans and their ecological environments. Ecopsychology examines the influence of environment on human behaviour, affect, personality, identity and attitudes (Blair, 2013). Additionally this field of psychology aims to improve pro-environmental attitudes and behaviours, whilst assisting in the reduction of environmental damage and anthropogenic climate change (Blair, 2013). For the purpose of this study, ecopsychology reveals the interdependence between humans and nature.

Theoretical Foundation

The research study incorporates a positive psychology theory, specifically the PERMA model (Seligman, 2011). This theory of well-being comprises of five core elements, namely positive emotion, engagement, relationships, meaning and accomplishment.

For years numerous psychologists have been conceptualising theories in order to uncover the components to a fulfilling life (Goodman, Disabato, Kashdan & Kauffman, 2018). Their efforts have led to expansive new definitions, models and empirical measures of well-being (Goodman et al., 2018). While this research has contributed to the vast informative body of work, many of these theories illustrate overlapping conceptual frameworks. Therefore Seligman's (2011) PERMA model aims to incorporate a unique and holistic representation of well-being.

Competing Models and Measures of Well-being

Various researchers tend to disagree on the components that constitute well-being (Goodman et al., 2018). Bradburn's (1969) hedonic balance model states that well-being is increased by a high ratio of positive to negative affect. Expanding on this idea, Diener's (1984) tripartite model of subjective well-being (SWB) incorporates both emotional reactions and cognitive judgements. Thus the components of this model relate to how one's life is viewed as satisfactory or ideal (Goodman et al., 2018).

Propositioning a more nuanced tactic, Ryff's (1989) model of psychological well-being (PWB) comprises of six elements closely related to the philosophical traditions of ancient Greeks and psychological theories from existential, developmental and humanistic traditions (Goodman et al., 2018). This model employs six elements that constitute positive functioning. These are self-acceptance, environmental mastery, positive relations with others, autonomy, purpose in life and personal growth.

Keyes (1998) united Diener's SWB components with Ryff's PWB elements but included a third type of well-being in the form of social well-being (Goodman et al., 2018). Likewise, Compton (2001) conceptualises three components of well-being, subjective well-being, personal growth and religiosity. Therefore this list outlines a few seminal theorist of well-being, but illustrates the broad range of conceptual and terminological variation in the field of well-being.

Seligman's PERMA Model

Navigating through the variation of past models, Seligman (2011) constructed his own model of well-being, labelled 'Flourish', outlined in his influential trade book which was extensively embraced by positive

psychology practitioners (Goodman et al., 2018). Seligman (2011) established five elements of well-being, namely positive emotions, engagement, relationships, meaning and accomplishment (PERMA). He claims that these elements are inherently rewarding, signifying great worth in carrying out any task (Goodman et al., 2018). Thus the combination of these five elements produces human flourishing. Additionally his model aims to provide more than one indicator of how well people are doing (Goodman et al., 2018). With regards to this, Seligman integrates components of hedonia and eudaimonia into one model. This therefore provides a holistic approach to well-being, compared to prior models which included either hedonia or eudaimonia (Goodman et al., 2018).

Five Elements of PERMA.

According to Seligman's (2011) model, *positive emotions* are defined as hedonic feeling of happiness, including joy, satisfaction and cheerfulness. Secondly, *engagement* refers to a mental connection to activities or organisations, including feelings of immersion, interest and engagement in life (Kern, Waters, Adler & White, 2015). The third element, *relationships* involves feelings of social integration, comfort and care by others, and contentment with one's social connections (Kern et al., 2015). The fourth element, *meaning* refers to the belief that one's life is significant with feeling connected to a greater force (Kern et al., 2015). Lastly, *accomplishment* is viewed as a goal orientated process in which one is capable of carrying out daily tasks, and feeling a sense of achievement (Kern et al., 2015). Seligman (2011) employs these five elements as the pillars of well-being in which individuals strive to achieve. Additionally the elements of PERMA fall into the positive side of the mental health spectrum. However Seligman (2011) states that well-being is not simply the absence of negative psychological states, but something deeper.

PERMA and Green Space

Due to the rapid expanse of urbanisation, our connection with nature, particularly green space, continues to deteriorate (Larson et al., 2016). Capaldi, Dopko and Zelenski (2014) state that consistently, personality, attitudinal, behavioural and well-being differences are displayed between individuals that are connected to their natural environment and those who are not. This illustrates that nature and well-being, amongst other components share an integral connection. Therefore when urbanisation impedes this connection, a decrease in general well-being may occur (Capaldi et al., 2014).

Because PERMA explains elements that lead to well-being or human flourishing, it can be applied to green space. Likewise, Larson et al (2016)

suggests that there are multiple contributions of green space that leads to human health and well-being. For example, individuals that live in greener urban environments tend to display more positive indicators of mental health than those living in less green environments (Larson et al., 2016). This includes lower depression rates and lower self-reported and biologically measured stress (Larson et al., 2016). This component of green space relates to the element of positive emotions in the PERMA model. Additionally green spaces, particularly public or residential green spaces facilitate social connections, neighbourhood satisfaction and community attachment (Larson et al., 2016). This component of green space relates to relationships present in the PERMA model.

Furthermore individuals that experience a greater connection to nature tend to be more conscientious, extraverted, agreeable and open (Capaldi et al., 2014), displaying elements of engagement in PERMA. Moreover Capaldi et al (2014) states that individuals connected to their natural environments display pro-environmental attitudes, engage in sustainable practices and share an increased concern about the negative impact of human activities on the environment. Thus this component relates to the element of meaning and accomplishment found in PERMA. Therefore Seligman's (2011) PERMA model provides a solid theoretical background for understanding the relationship between green space and well-being.

Despite the conceptual confusion in the field of well-being research, Seligman's (2011) PERMA model illustrates a unique holistic approach that promotes human flourishing. Therefore this model provides an important connection between green space and well-being.

Literature Review

Urbanisation continues to increase at a rapid pace, with over fifty percent of the global population now residing in urban environments (Houlden et al., 2018). As a result, numerous individuals have been separated from the natural environment. Houlden et al (2018) suggests that green space has beneficial qualities, critical for human health and well-being. Thus, the literature will focus on one's inherit connection to nature, demonstrate the positive correlation between green space and well-being, and illustrate the practical application of nature-based therapy. Therefore the literature that will inform this study aims to highlight this crucial relationship.

Biophilia Hypothesis and Human Evolution

Kellert and Wilson (1993) hypothesise that humans have an innate attraction to focus on and connect with other living organisms. This idea is known as the biophilia hypothesis (Kellert & Wilson, 1993). The biophilia hypothesis recognises the interconnectedness of all sentient beings on earth, but acknowledges the deep post-industrial disconnect that has developed between humans and nature, and the subsequent consequences on health and well-being (kellert & Wilson, 1993, p. 42-43). Likewise, Capaldi et al (2014) shares a similar sentiment, in that this inborn connection can be understood through an evolutionary perspective. He explains that humans have spent the majority of their evolutionary history in natural environments, and have only recently migrated to urban living (Capaldi et al., 2014). More precisely, it would have been advantageous for our ancestors to undergo an evolutionary adaption to connect with nature in order to survive and thrive in their immediate environment (Capaldi et al., 2014). The above illustrates the early relationship between humans and nature.

The gap in nature exposure or connectedness between our early evolutionary environments and modern urban environments continues to expand (Capaldi et al., 2014). For example, Capaldi et al (2014) states that children spend less time in green spaces than previous generations, leading to several negative consequences, including lower emotional well-being (happiness), lower subjective well-being (predicts life outcomes, such as health, longevity and disease) and obesity. Similarly, Sackett (2010) links nature disconnection in children to unhealthy societal trends, particularly childhood obesity.

One of the common benefits of utilising green space revolves around physical activity (Houlden et al., 2018). However, today's youth have limited exposure and access to physical activity due to the advent of modern technology such as television, computers, smart phones, online streaming and console gaming (Sackett, 2010). Thus, modern technologies consume

the vast majority of our time, promoting sedentary activities. Additionally, Sackett (2010) references the concept of nature deficit disorder, which ultimately provides a clinical conceptualisation of the disconnection between humans and green space, and the resulting negative effect on cognitive, emotional and physical well-being.

Based on the evidence provided, it is clear that urban environments are not conducive with nature connectedness. Subsequently, this physical disconnect from the natural environment in which people evolved from, may negatively impact well-being. Our evolutionary relationship with nature continues to diverge in the face of urban living.

Human Health, Well-being and Urbanisation

Research has shown that the process of urbanisation is linked to an increase in mental health related illness across the globe (Barnes, Donahue, Keeler, Shorb, Mohtadi & Shelby, 2019). As a response, there is a need to understand how urban environments influence human health and well-being (Frumkin, Bratman, Breslow, Cochran, Kahn & Lawler, 2017). According to Barnes et al (2019) green spaces have been associated with a variety of health promoting factors that remain generally consistent. These include better self-reported health, increased physical activity (physical health), improved mood, positive affect, improved self-esteem and cognitive functioning (Barnes et al., 2019). Likewise, evidence from ecopsychology assessments demonstrate that contact with nature improves positive affect, self-esteem and cognitive functioning (Barnes et al., 2019). There is a growing positive correlation between green space and well-being. However urban environments continually present themselves as buffer to this relationship. Klimanova et al (2018) states that green spaces improve the quality of urban life and promotes sustainable development.

Frumkin et al (2017) suggests that irrespective of specific research findings on the benefits of green space on health and well-being, landscape contractors, urban or city planners and public health representatives have yet to implement green practices. However, concerns regarding the specific elements of nature exposure or experiences that provide well-being aid in preventing green practices and policies (Barnes et al., 2019). Regardless of the particularities, a positive correlation does exist between green space and well-being. Furthermore, the process of urbanisation cannot be stopped, therefore it is vital to maintain and develop urban green spaces to allow individuals access to their beneficial qualities.

Well-being as a Measure of Health

Historically researchers have measured health using objective indicators, such as gross domestic product (GDP), literacy and poverty

(Larson et al., 2016). However Larson et al (2016) suggests that these indicators fail to acknowledge the broad range of elements that influence an individual's evaluation of life. Thus, the concept of well-being is positioned as an appropriate measure for the evaluation of multiple aspects of everyday life. Contemporary measures of well-being range from cognitive evaluations that measure evaluative well-being, to reactive experiences that measure experienced well-being (Larson et al., 2016). These measures illustrate the practical application of linking well-being and health. Such measures suggest that well-being is a social and public amenity.

Brymer, Freeman and Richardson (2019) indicate that mental health related illness is on the rise. Discussions have led to societies assessing how they facilitate or inhibit well-being (Larson et al., 2016). Thus well-being is no longer a private or individualised amenity. Consequently, nations around the globe are now measuring happiness (subjective well-being) as a general standard of life (Larson et al., 2016). Therefore, Brymer et al (2019) suggest that well-being has gained prominence in the field of public health, which has elicited a reaction from policy-makers. However, research continues to identify key correlations that facilitate positive well-being outcomes (Larson et al., 2016). One of these key correlations involves nature or green space.

Green space, Health and Well-being

The concept of health is generally considered multifaceted. The World Health Organisation (WHO) refers to health as a comprehensive state of physical, psychological and social well-being, and not simply the absence of disease (1948). Likewise, the concept of well-being is defined as a positive physical, psychological and social state and not merely the absence of negative associations (Bragg et al., 2013, p. 10). Contemporary research provides convincing evidence that exposure to green space positively affects health and well-being (Wood et al., 2018). From wilderness therapy intervention programmes (Sidenius et al., 2015), to small plants for reducing daily office stress (Toyoda et al., 2020) and views of greenery promoting positive mental states (Groenewegen et al., 2006). Additionally, Wood et al (2018) explains that these positive aspects exist due to the perceptions that green spaces provide relaxation and escapism, and thus have a positive effect on well-being. It is therefore evident that multiple relationships exist between green space and well-being. These relationships suggest a positive correlation with human well-being and health. Additionally, Larson et al (2016) posits that collectively, these relationships can offer psychological enrichment and promote public health. Hence, this relationship is essential for human welfare.

Green space provides supplementary ecosystem services that support human health and well-being. Larson et al (2016) states that research conducted on specific neighbourhoods indicate that proximity to green space is positively associated with higher levels of physical activity and cardiovascular health. Thus, the benefits of this ecosystem service aids in reducing blood pressure and calorie intake (Bragg et al., 2013, p. 14). Likewise, James, Banay, Hart & Laden (2015) suggest that green space may encourage physical activity by providing an area for play and exercise. Additionally, James et al (2015) posits green space as an environmental determinant to obesity due to its association with physical activity. This evidence outlined above supports and highlights a positive association between green space and physical activity.

Green spaces does not only improve physical health but improves psychological well-being. Generally, larger neighbourhood greenness or access to green spaces is associated with reduced stress, psychological distress, depressive symptoms, clinical anxiety and mood disturbances (James et al., 2015). Furthermore, James et al (2015) found that individuals who perceived their neighbourhood as highly green displayed better mental health than those who perceived their neighbourhood as moderately green. Thus, consistent evidence suggests a positive correlation between green space and psychological well-being. Therefore, growing research on the positive relationship between green space and well-being is a vital component for human health. Given the high prevalence of mental illness in today's society, nature can act as an essential health care resource. As a result of mounting evidence, green space is becoming a prominent alternative intervention for human health and well-being (James et al., 2015).

Ecotherapy as an Alternative Solution for Health and Well-being

Given the complexity of modern society, it is vital to offer individuals suffering with mental illness a choice when it comes to treatment. As their experiences are entirely personal and different individuals react differently to various treatments or therapies (Farmer, 2014). Consequently, alternative treatments are gaining popularity as a means of reducing reliance on public health care services (Farmer, 2014). These treatments range from yoga to mindfulness, and now the use of ecotherapy.

The concept of ecotherapy is conceptualised as a general term for nature-based interventions and therapies (Sidenius et al., 2015). Evidence suggests that ecotherapy has therapeutic applications for vulnerable individuals when utilised as facilitated interventions (Sidenius et al, 2015). Continually, Sidenius et al (2015) states that ecotherapy usually consist of a facilitated, specific intervention, geared towards the needs of the individual.

Ecotherapy consists of a range of interventions that promote human health and well-being.

Ecotherapy Interventions.

Sidenius et al (2015) states that ecotherapy approaches have the ability to enhance well-being, thus providing various health outcomes. Ecotherapy encourages individuals to connect with others through nature, facilitating social interaction, participation and connection (Bragg et al, 2013, p. 18). Brazier (2017), a Zen practitioner and psychotherapist, adopted this ideology in order to materialise the relationship between nature and well-being. Her book, *Ecotherapy in Practice: A Buddhist model* aims to provide a blueprint for a Buddhist-informed ecotherapy that provides method, theory and practice for individuals and practitioners to draw upon (Brazier, 2017). Brazier (2017) uses her model to address the distressing impact neo-liberal policies has on our ecosystem and posits whether individual psychology can be seen in isolation from our interconnectedness with the planet. Thus, Brazier (2017) aims to use ecotherapy as a tool to address human malaise in relation to our behaviour towards the ecosystem. Therefore this ecotherapy model or intervention displays a triadic relationship between client, therapist and nature.

Social and therapeutic horticulture (STH) is a form of ecotherapy that utilises gardening activities and practices to develop individual well-being through time spent in green spaces (Bragg et al, 2013, p. 16). Wood et al (2018) explains that horticulture has proven itself as an significant tool in promoting health, rehabilitation and well-being, especially amongst vulnerable individuals. These benefits occur as, STH comprises of diverse activities that can be adapted to the client in order to facilitate physical, social and psychological well-being (Wood et al., 2018). Furthermore, STH is commonly administered to people with mental health problems, learning difficulties, physical disability and social problems (Bragg et al., 2013, p. 16). Thus this intervention demonstrates how the properties of nature facilitate well-being amongst individuals suffering from a range of issues.

Green exercise therapy promotes physical activities whilst simultaneously being immersed in nature (Bragg et al., 2013, p. 16). This treatment option usually involves participating in green exercise activities which are facilitated by an instructor (Bragg et al., 2013, p. 16). Moreover, James et al (2015) states that the therapeutic use of green exercise is proven more beneficial than regular physical exercise, particularly in individuals with mild to moderate depression. This intervention emphasise the notion of mutual healing, where the interchange between humans and nature enhances well-being. Hence, ecotherapy interventions aim to promote positive health and well-being benefits.

Wilderness therapy is defined as an experiential intervention that takes place in a remote outdoor setting in an effort to provide well-being opportunities through nature immersion (Bragg et al., 2013, p. 17). This intervention utilises two components, nature as a co-therapist and therapeutic activities or formal therapy whilst in a wilderness setting (Bragg et al., 2013, p. 17). The manner in which this intervention works is that it encourages healthy diet and exercise, and group and individual therapy (Bragg et al., 2013, p. 17). Sidenius et al (2015) states that wilderness therapy interventions have been successfully used with adolescents with behavioural problems, particularly in the United States of American. Therefore, this intervention utilises the synergies between nature and humans to facilitate positive health and wellbeing outcomes.

Although, ecotherapy is a diverse and varied field of therapeutic interventions, the linking ethos is contact with nature. Moreover, ecotherapy interventions increase participant connection to nature, acting as a predictor of subjective well-being (Bragg et al., 2013, p. 18). Therefore, mounting evidence highlights both the health and well-being benefits of contact or connection with nature. More importantly, the disconnection with nature brought upon by urbanisation, can be reconnect through the use of ecotherapy improving human health and well-being.

Conclusion

The review of existing literature has revealed that there are multiple positive correlations between green space or nature and well-being. It is important to note that nations and communities have positioned well-being as a novel measurement of health. Given this, it is vital that humans are encouraged to reconnect with green space, despite the continuation of urbanisation. This relationship between humans and nature is embedded in our psyche as a result of our early evolutionaly development. Likewise, the application of ecotherapy interventions facilitates positive health and well-being outcomes, from increased physical activity, stress reduction, anxiety relief and social participation to name a few. Therefore drawing on the evidence provided, nature is an essential health care service which promotes human flourishing

Methodology

Research Paradigm

The positivist paradigm was utilised for this research study. Positivism's central tendency advocates the use of objectivity in order to discover causal relationships that aim to predict and control the natural and social world (du Plooy-Cillers, 2014). Additionally, knowledge is gained through meticulous observation, experiments and hypotheses testing (du Plooy-Cillers, 2014). The goal at the end of the research process is to either accept or reject the hypotheses based on precise evidence. Thus in order to validate the hypotheses, an accurate measure of the relationship between the independent and dependent variables needs to be conducted (du Plooy-Cillers, 2014). This allows the researcher to establish if a relationship exists between the two variables.

Positivism was appropriate for this research study, as it involved measuring the relationship between the independent variable (green space) and the dependent variable (well-being). Although the study did not aim to predict a causal relationship, it did however aim to establish a positive correlation between the two variables. Furthermore this allowed for the data to be quantified and processed statistically in order to convey an objective reality and thus determine if a correlation existed between the two variables. The positivist paradigm therefore favoured a correlation design in order to verify facts through observable measurements (du Plooy-Cillers, 2014).

Additionally positivism allowed the researcher to remain independent from the data and maintain objectivity during the research process (du Plooy-Cillers, 2014). This created value-free research that relied on trustworthy measurements in order to establish a reliable correlation between green space and well-being.

Research Design/ Approach

This study utilised a quantitative approach, as the study aimed to objectively measure the relationship between two variables. Likewise, study aimed to predict a positive correlation with the intent of generalising the findings to the broader population. Therefore, a quantitative methodology was suited for this research, in order to produce empirical data that can be quantified. Furthermore, this study utilised a correlational research design in order to establish if a relationship existed between two variables (Du Plooy-Cilliers, Davis & Bezuidenhout, 2018). The two variables being measured consisted of the independent variable (residential green space) and dependent variable (general well-being). Furthermore, the purpose of this research design was to determine whether there is a positive, negative or

zero correlation. However based on the hypothesis, this study aimed to predict a positive correlation.

Population and Sampling

The target population consisted of all residential areas in Cape Town, however this is not viable. The target population refers to everyone that falls within the population parameters, but this needed to be edited down to a section of the population that could be included in the study (du Plooy-Cillers, 2014). Thus, the accessible population from which the study drew its sample was residents of the suburb of Edgemead. Sampling parameters included individuals that reside in Edgemead and adults (18+). Individuals younger than eighteen years of age were not eligible to participate in this research study, due to their high risk status. Thus, minors or children were excluded from the research study. There were no set gender parameters, as the study does not focus on the influence of gender dynamics. Therefore, the sample included both male and female participants.

The intended sample size was 25 due to the quantitative nature of the study. Quantitative research studies typically favour large samples as they are more representative of the population being studied (du Plooy-Cillers, 2014). However, a sample size of 20 was obtained due to participation withdrawal and lack of response from participants. Although, a sample size of 20 is low for a quantitative design, it reflects an honours level research study.

A mixture of convenience and snowball sampling was used. The use of convenience sampling allows for participants to be gathered in a short period of time given the high number of residents in the area (du Plooy-Cillers, 2014). Additionally, this sampling method allowed for the population parameters to be easily implemented (du Plooy-Cillers, 2014). The use of snowball sampling lead on from convenience sampling. Participants initially identified using convenience sampling then recommended neighbours, friends and family living in the area to participate in the study. That said, convenience sampling was the dominate sampling method, as most participants were not able or were unwilling to recommend others to participate in the research study. Therefore the use of these two sampling methods allowed for efficient and easy access to potential participants.

The unit of analysis was adult residents, as these participants are the entity that frames what is being analysed (du Plooy-Cillers, 2014). Furthermore, these individuals were eighteen years or older, both male and female, and residents of the suburb of Edgemead.

Data Collection Method

Data was collected using two 5-point Likert scales, the 14-item Connectedness to Nature Scale (CNS) (Mayer & Frantz, 2004) and the 14-item Scales of General Well-being (SGWB) (Longo, Coyne & Joseph, 2017). CNS is a standardised measuring instrument that is an important predictor of ecological behaviour and subjective well-being (Meyer & Frantz, 2004). It is a reliable multi-item scale that is easy to administer and predicts behaviour fairly well (Meyer & Frantz, 2004).

The 14-item SGWB (Longo et al., 2017) is a short-hand form of the 65-item SGWB (Longo et al., 2017). It is a standardised measuring instrument that is multidimensional and integrates fourteen distinct constructs found in well-being literature (Longo et al., 2017). It is quicker and easier to administer than the 14-item SGWB (Longo et al., 2017), while still remaining valid and reliable (Longo et al., 2017). These instruments were appropriate for this study as they enabled a group of individuals to complete the data collection process in a systematic and timely manner.

The data collection process was carried out from August 8, 2020 to August 24, 2020. The data was collected using two 5-point Likert scales, the 14-item Connectedness to Nature Scale (CNS) (Mayer & Frantz, 2004) and the 14-item Scales of General Well-being (SGWB) (Longo et al., 2017). These questionnaires were intended to be distributed by email only, however due to limited or no access to printing and scanning facilities by some of the participants, hard copies were made available. Email addresses of individuals were gathered using convenience and snowball sampling. Participants that were able to fill out the questionnaires electronically were sent by email, while the rest were hardcopies.

8 participants were able to complete the questionnaires electronically. These participants were sent an email that instructed them to read through the informed consent form and sign it before completing the questionnaires, and send back their results. Furthermore, the email consisted of an attachment which included three documents. Firstly the informed consent form, secondly the 14-item Connectedness to Nature Scale (CNS) (Mayer & Frantz, 2004), and thirdly the 14-item Scales of General Well-being (SGWB) (Longo et al., 2017).

12 participants completed a hard copy of the questionnaires. These individuals were not able to participate electronically and preferred a physical copy. Consultation with the supervisor was conducted in order to gain consent before adapting the data collection method. Thus, 12 hard copies were printed consisting of the informed consent form, the 14-item

Connectedness to Nature Scale (CNS) (Mayer & Frantz, 2004) and the 14-item Scales of General Well-being (SGWB) (Longo et al., 2017).

Convenience sample participant's addresses were known, while those obtained through snowball sampling were required to send their home addresses. Hardcopies were placed in the letter box of participants and then collected once they were completed.

The response time of participants varied considerably between those sent by email and those given a hardcopy. The 8 participants who completed the questionnaires by email had a response time between one to two weeks. However, the 12 participants who completed a hardcopy responded between one to seven days.

Data Analysis Method

Data collected from the surveys was statistically analysed in accordance with a quantitative design. The data gathered from participants was analysed using descriptive statistics. This enabled the data to be analysed in a meaningful way in order to determine if a relationship exists between the scores.

This analysis utilised both measures of central tendency (mean, median and mode) and measures of variability (range and standard deviation). Measures of central tendency refers to how high or low or on average a group of participants scores on a measure (Roodt & De Kock, 2018). This allows for individuals scores to be compared and contrasted (Roodt & De Kock, 2018). Measures of variability indicate the degree to which an individual's scores are dispersed around the mean (Roodt & De Kock, 2018). This gives an indication of how the scores vary or deviate from the mean (Roodt & De Kock, 2018).

Additionally, measures of association (Pearson's correlation coefficient) were integrated in order to determine if a negative, positive or zero correlation exists (Roodt & De Kock, 2018). Microsoft Excel was used to plot and calculate data. Furthermore, the data was translatedin a table format. This format allowed for the data to be contrasted and compared in order to determine if a relationship exists between the two variables. The use of statistical analysis allowed for the research to draw conclusions from the data, ensuring that data interpretation remains unbiased and empirically sound.

Statistical analysis of the data from the CNS and the SGWB were performed using spread sheet, Microsoft Excel. Each participant was randomly assigned a number from one to twenty. The participant's score from each question in the CNS was combined to give them a total score for

the questionnaire. The total scoring ranges from a minimum of 14 to a maximum of 70. This procedure was conducted for each participant.

Likewise, the participants score from each question in the SGWB was combined to give them a total score for the questionnaire. The total scoring ranges from a minimum of 14 to a maximum of 70. This procedure was carried out for each participant. Thus, each participant had a total score for the CNS and a total score for the SGWB. In the spread sheet, each participant's total scores were plotted. The first column provided the allocated number of the participant, the second column provided their CNS score and the third column provided their SGWB score.

At this point, descriptive statistical analysis could be conducted. The measures of central tendency were calculated first. The formula for mean was inputted in Excel to calculate the mean score for CNS, and then for SGWB. These scores were plotted below each column. The formula for median was inputted in Excel to calculate the median score for CNS, and then for SGWB. These scores were plotted below the mean scores. Continuality, the formula for mode was inputted in Excel to calculate the mode score for CNS, and then for SGWB. These scores were plotted below the median scores.

The measures of variability were calculated next. The formula for range was inputted in Excel in order to calculate the range score for CNS, and then for SGWB. These scores were plotted below the mode scores. Thereafter, the formula for standard deviation (SD) was inputted in Excel to calculate the SD score for CNS and SGWB. These scores were plotted below the range scores. Lastly, the measures of association were calculated. The formula for correlation coefficient (r) was inputted in Excel to calculate r score for the data sets, with CNS providing the x value and SGWB providing the y value. The r score was plotted below the SD scores.

Once the spread sheet was complete, the data was converted into a table format on Microsoft Word for accessibility and convenience. The use of this format allowed for the data to be interpreted by means of comparisons and differences. This allowed the researcher to determine if a relationship existed between the two variables (CNS and SGBW), and what type of correlation is present. These results were recorded in the findings of the research study in order to answer the research question, hypothesis and purpose.

Findings and Interpretation of Findings

This section introduces the results of the research study. Below is a summarised table of statistics, followed by the descriptive data and the discussion.

Table 1

Descriptive Statistics for CNS and SGWB

Item	CNS	SGWB
Mean	51.5	55.6
Median	50.5	56.5
Mode	48	56, 60, 61
Range		
Maximum	64	62
Minimum	44	37
Standard deviation	5.5	6
Correlation coefficient	0.3	

Descriptive Data

The data representing measures of central tendency, measures of variability and measures of association are displayed in Table 1. The mean ($\overline{X} = 51.5$) score of Connectedness to Nature Scale (CNS) was slightly lower than the mean ($\overline{X} = 55.6$) score of Scales of General Well-being (SGWB). The difference between the two is 4.1 which specify that the $\overline{X}$ scores are closely related. Similarly, both scales indicate a fairly high average. The median (Med = 50.5) for CNS again is lower than the median (Med = 56.5) for SGWB. The difference is 6 which is slightly higher than the $\overline{X}$ difference. This indicated that the scores are not as closely related as revealed by the $\overline{X}$. The $\overline{X}$ score for CNS was brought up by an outlier, likewise the $\overline{X}$ score for SGWB was brought down by an outlier. Therefore, the median is a better indication of central tendency.

The mode for CNS was 48, while the SGWB displayed a trimodal group of data, which were 56, 60 and 61. The trimodal group of data consisted of 9 participants which is 45% of the total sample. This indicated that slightly less than 50% of the sample, commonly scored within this triad. There was a slight difference in the range between CNS and SGWB. The maximum score for CNS was 64, while the maximum score for SGWB was 62. The difference between the two scores was 2. However, the minimum score for CNS was 44 and minimum score for SGWB was 37, indicating a

difference of 7. This indicated that CNS had a higher maximum and minimum score than SGWB.

The standard deviation for CNS was 5.5, while SGWB had a standard deviation of 6. Thus, the CNS score was 5.5 standard deviations away from the mean, and the SGWB scores were 6 standard deviations away from the mean. This indicated that the scores are fairly equally spread out from one another, regarding both CNS and SGWB. The data gathered from both scales indicated a relationship between green space and general well-being. The correlation coefficient was calculated at 0.3. A correlation of 0.3 indicated a positive correlation, however the strength of the correlation was weak. Therefore, this indicated a weak positive correlation between CNS and SGWB.

Discussion

The purpose of this study was to provide a quantitative analysis of the relationship between green space and general well-being. Auspiciously, a fairly clear picture emerged. The relationship between green space and general well-being appears to be positive albeit weak. Thus, individuals that spend time in nature may positively influence general well-being.

As previously stated, the findings of the study confirmed the initial hypothesis. Although a positive relationship was confirmed, the strength of the relationship was weak. That being said, the findings of the study revealed that there was in fact a relationship between the two variables under review. This relationship indicated that green space did influence well-being amongst the participants, but not significantly. Furthermore, the weak relationship between the two variables confirmed the criticisms of current literature regarding the lack of knowledge in the field of ecopsychology (Bragg et al., 2013, p. 18). Regardless, the findings provided enough evidence on a small scale that this relationship was worth investigating

The majority of research related to the study found a positive relationship between green space and well-being (Beyer et al., 2014). However, this relationship always seemed to be threatened by the presence of urbanisation (Larson et al., 2016). The sample for the study was taken from a suburban suburb. This area consisted of a mixture of highly developed infrastructure, such as free standing housing, apartment blocks, a community centre and library, sporting fields, a business park, religious buildings, primary and high school and a local retail centre. That said, the area also consisted of various pockets of green space, such as private gardens, local parks, sporting fields and a nature reserve. Thus, the area was ideal for the study, as residents resided in an urban environment but

had access to green space. Therefore, the study could ascertain whether a relationship existed between the two variables

According to existing research it is unclear whether green space is holistically attributed to improved general well-being (Barnes et al., 2019). This was confirmed by the weak positive correlation obtained from this study. Thus, participants well-being seemed to be influenced from sources other than green space. Other potential sources of well-being may be attributed to lifestyle, economic status, social support or societal amenities (Larson et al., 2016). As noted by Larson et al (2016), urbanisation provided individuals with greater access to societal amenities, which may contribute to general well-being. This indicated that not all aspects of urbanisation may be negative. Additionally, the findings reinstated this, as the scores for SGWB are higher than that of the CNS scores. Thus, the participant's general well-being may be correlated with another variable or variables.

Likewise, Wood et al (2018) states that nature does not seem to have a direct benefit, but is influenced by how the individual perceives the natural environment. The data seemed to support this. One possible explanation for this could be the flexibility of green space as a concept. Nature connectedness can be influenced either by heightening self-awareness or by increasing exposure and time spent in green space (Wood et al., 2018). Thus, it is possible that urban residents have a relatively low connection to nature based on sporadic contact with green space and their associated benefits. This could explain why the scores for CNS were lower than that of the SGWB scores, further indicating that improved well-being may be correlated with other variables and not necessarily green space.

The PERMA theory applied in the study revealed that individuals require both eudaimonic well-being and hedonic well-being to achieve human flourishing (Seligman, 2011). However, Capaldi et al (2014) stated that an increased concern for the environment and engagement in nature might convey more hedonic than eudaimonic costs to well-being. Thus, this may result in lower correlations with more classical hedonic measures of well-being (for example, positive affect and life satisfaction) (Capaldi et al., 2014). The SGWB was a measure of hedonic well-being which might explain the low correlation between the two variables. Thus, a stronger correlation might have been observed if the instrument measuring well-being focused on eudaimonic well-being.

According to Wood et al (2018), evidence for nature-based solutions to urban problems may facilitate secondary well-being benefits rather than direct benefits. These nature-based solutions generally refer as actions to protect and manage natural environment which address societal challenges (for example, climate change and water and food security)

effectively, while simultaneously providing human well-being benefits (Wood et al., 2018). The idea of secondary well-being benefits reflects the general trend of the results, as there may be other variables that have a stronger influence on well-being, which may be expressed as primary benefits. However, there is clearly strong evidence in the current literature for natured-based solutions or therapies for improvements in human health and well-being (Wood et al., 2018). The results of this study confirmed this with a positive correlation.

Therefore, the results of the study cannot conclude a significant positive relationship between green space and general well-being, but rather a weak, positive correlation. Despite this, green space may be limited to secondary well-being benefits, which is still a valuable asset for achieving human flourishing.

Validity and reliability

The research study utilised two standardised instruments in the form of the 14-item CNS (Mayer & Frantz, 2004) and 14-item SGWB (Longo et al., 2017). This ensured that the same information was gathered from all participants, in the same form, in order to draw comparisons between participants. Both instruments ensured reliability through the use of specific standardised scales that produced stable and consistent results, which can be reproduced in other studies. Additionally, both instruments were developed by experienced researchers whom conducted extensive field-testing.

Mayer and Frantz (2004) used five studies to assess the validity and reliability of the 14-item CNS. Data from these studies demonstrated that CNS had good psychometric properties, correlates with related variables and was uncorrelated with possible confounds (Mayer & Frantz, 2004). Moreover, the 14-item CNS (Mayer & Frantz, 2004) ensured validity as it aims to measure the relationship between humans and the natural world (green space). This corroborated that the questions presented in the questionnaire provided answers to the research question. Likewise, the 14-item SGWB (Longo et al., 2017) ensured validity, as the questions in the questionnaire provided an accurate measure of general well-being. Therefore, the use of two standardised instruments allowed validity and reliability throughout the study.

Conclusion

The research study aimed to explore the relationship between green space and general well-being. The results of the study demonstrated that green space was positively correlated with general well-being. However, the relationship was weak which prevented the study from concluding a significant relationship. These findings suggested that there are likely secondary benefits associated with green space which may positively influence general well-being (Wood et al., 2018).

The emergence of secondary benefits associated with green space indicated that the participants' general well-being may be influenced by other variables. These variables may be associated with urban amenities which suggested that urbanisation may not be holistically negative (Larson et al., 2016). However, widespread urbanisation would interrupt the facilitation of secondary benefits which may be associated with green space (Wood et al., 2018). This would inevitability lead to a decrease in general well-being amongst individuals. Thus, governmental policy makers should be aware of the potentially negative effects of urbanisation on human health and well-being (Frumkin et al., 2017).

Based on the positive direction of the findings, it can be said that there is indeed value in the relationship between green space and well-being. More importantly, this relationship contributes evidence towards the practice of ecotherapy as an alternative to traditional practices of health and well-being (Bragg et al., 2013, p. 18).The disconnection brought about by urbanisation can be reconnected using ecotherapy, therefore positively influencing human health and well-being. Although, the findings of this research cannot make strong correlations about this relationship, it is worthwhile for future research to elaborate on the link between humans and nature.

That being said, a sense of feeling connected to nature has now been shown to predict general well-being which adds empirical backing to a discussion that has lacked empirical facts (Mayer & Frantz, 2004). Therefore, these findings highlight the psychological significance of the human-nature relationship.

Directions for Future Research

There is mounting consensus that individuals need to change their behaviours and consumption patterns in revolutionary ways in order to create an environmentally sustainable society which positively influences human health and well-being (Mayer & Frantz, 2004). Future studies can be used as a tool for activists and researchers alike to monitor the extent to

which society have effectively implemented the necessary changes to achieve this (Mayer & Frantz, 2004).

Additional areas of interest in this field would be to examine the effects of situational factors and personality characteristics that may influence the connection between nature and humans (Mayer & Frantz, 2004). Likewise, it could also test whether ecotherapy interventions conducted on children or adults actually fosters a sense of feeling connected to nature and the subsequent benefits (Mayer & Frantz, 2004). Another potential application relates to the impact of architectural factors, such as windows looking out onto greenery, has on the connection to nature and how this influences psychological well-being (Mayer & Frantz, 2004).

Ecopsychology is increasingly being seen as a vehicle that brings about less research orientated discussions of ecologists and ecopsychologist to the realm of mainstream psychology (Mayer & Frantz, 2004). Thus, future research is necessary to test the replicability of these emerging findings in other environmental, social and geographical contexts (Wood et al., 2018). Beyond correlational studies, empirical work is predominantly needed to produce a significant and more persuasive evidence base for policymakers in order to promote human health and well-being through an environmentally sustainable society.

Ethical Implications

Due to the honours level of the research study, there were no significant ethical implications. However, there were various ethical considerations that were taken into account. An ethical clearance letter (see Annexure E) was provided by the Independent Institute of Education (IIE) ethics committee at Varsity College Cape Town, before any data was collected. Additionally, all research conducted was in accordance with the IIE's ethical guidelines, located in the postgraduate handbook.

Participants were required to sign an informed consent form (see Annexure B) before completing the two questionnaires. All data obtained was stored on a password encrypted laptop accessible only by the researcher. Furthermore, all raw data was only privy to the researcher and the supervisor. Lastly, the research study did not utilise any high risk groups.

Limitations

One of the aims of quantitative studies is to make generalisation from the sample. However, due to the research study being conducted at an honours level, the sample size remained relatively small despite a quantitative design. Therefore, a sample size of 20 could not sufficiently construct generalisations. Additionally, a quantitative study favoured

objectively and measurability over rich subjective data. The subjective experiences of participant were therefore not considered. Such experiences could have potentially pin point the exact aspects of green space that influence general well-being.

The data collected electronically (those sent by email) proved to be a constraint, in relation to response time. On average, participant response time for those sent by email ranged from one to two weeks. This hindered the data collection period and caused delays for the data analysis. Additionally, the evidence base for the potential benefits of green space is frequently expanding and can be considered convincing but remains incomplete (Bragg et al., 2013, p. 23). This limitation often affects the credibility of the research, given the developing nature of the field.

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Annexure A: Concept Document Template

Title: Ecopsychology: The Relationship Between Green Space and General Well-being

Research Purpose/ Objective	Primary Research Question	Research Rationale	Seminal Authors/ Source	Literature Review – Conceptual Framework	Paradigm	Approach	Data Collection Method(s)	Ethics	Key Findings	Recommen dations
The purpose of the study aims to illustrate a positive correlation between green space and general well-being.	What is the relationship between general wellbeing and time spent in green spaces?	The use of Ecotherapy as an alternative treatment for general well-being.	Houlden et al., 2018 Capaldi et al., 2014 Wood et al., 2018.	Biophilia hypothesis and human evolution. Human health, well-being and urbanisation. Well-being as a measure of health. Green space, health and well-being. Ecotherapy as an alternative solution for human health and well-being. Ecotherapy interventions.	Positivist Epistemology: Knowledge generated will contribute to the larger body of work Ontology: Reality can be observed and is governed by laws Axiology: Objective and value-free research that represents an objective reality	Quantitative **Population** Residents of Edgemead. Adults 18+	14-item connectedness to nature scale (5-point Likert scale) 14-item scales of general well-being (5-point Likert scale)	Research conducted according to IIE's ethical guidelines. Consent forms used, data remains confidential and anonymous, and high-risk groups not included.	There is a weak, positive correlation between green space and general well-being Other variables may have positively influenced well-being amongst the participants	Larger sample needs to be utilised in order for a clearer statistical analysis. Sampling needs to be randomised. Steps need to be taken to control third variables. Well-being needs to be measured in terms of eudaimonic well-being.
Research Problem	**Secondary Questions/ Hypotheses/ Objectives**	**Key Concepts**	**Key Theories**			**Sampling**	**Data Analysis Method(s)**	**Limitations**	**Key Contribution**	
Urban expansion and development threatens the beneficial aspects of green spaces.	General wellbeing is positively correlated with green space.	Green space Urbanisation Ecotherapy Well-being Ecopsychology	Positive psychology PERMA Model			Non-probability Mixture of convenience and snowball sampling Size: 20	Statistical analysis (Mean, mode, range, median, SD.)	Subjective experience of residents not considered. Cant generalise due to sample size	Increase research and knowledge in the emerging field of ecopsychology.	

Annexure B: Informed Consent Form

Explanatory information sheet and consent form for participants
To whom it may concern, My name is Tristan Cornick and I am a student at IIE Varsity College Cape Town. I am currently conducting research under the supervision of Sam Pretorius, about the relationship between green space and general well-being. The study aims to discover a positive correlation between green space and general well-being. In order to discover this relationship, two questionnaires, one on green space and one on general well-being will be utilised. I hope that this research will enhance our understanding of the crucial relationship between humans and nature (green space) for improved general well-being. I would like to invite you to participate in my study. In order to explain to you what your participation in my study will involve, I have formulated questions that I will try to fully answer so that you can make an informed decision about whether or not to participate. If you have any additional questions that you feel are not addressed or explained in this information sheet, please do not hesitate to ask me for more information. Once you have read and understood all the information contained in this sheet and are willing to participate, please complete and sign the consent form below.
What will I be doing if I participate in your study?
I would like to invite you to participate in this research because (insert reason). If you decide to participate in this research, I would like to (explain exactly what participation will involve). You can decide whether or not to participate in this research. If you decide to participate, you can choose to withdraw at any time or to decide not to answer particular interview questions.
Are there any risks/ or discomforts involved in participating in this study?
Whether or not you decide to participate in this research, there will be no negative impact on you. There are no direct risks or benefits to you if you participate in this study. You might, however, indirectly find that it is helpful to talk about your (insert what you are examining). If you find at any stage that you are not comfortable with the line of questioning, you may withdraw or refrain from participating.
Do I have to participate in the study?
• Your inclusion in this study is completely voluntary; • If you do not wish to participate in this study, you have every right not to do so; • Even if you agree to participate in this study, you may withdraw at any time without having to provide an explanation for your decision.
Will my identity be protected?
I promise to protect your identity. I will not use your name in any research summaries to come out of this research and I will also make sure that any other details are disguised so that nobody

will be able to identify you. I would like to ask your permission to record the interviews, but only my supervisor, I and possibly a professional transcriber (who will sign a confidentiality agreement) will have access to these recordings. Nobody else, including anybody at IIE Varsity College Cape Town, will have access to your interview information. I would like to use quotes when I discuss the findings of the research, but I will not use any recognisable information in these quotes that can be linked to you.

What will happen to the information that participants provide?

Once I have finished all interviews, I will write summaries to be included in my research report, which is a requirement to complete my Bachelor of Arts Honours in Psychology. You may ask me to send you a summary of the research if you are interested in the final outcome of the study.

What happens if I have more questions about the study?

Please feel free to contact me or my supervisor should you have any questions or concerns about this research, or if there is anything you need to know before you decide whether or not to participate.

You should not agree to participate unless you are completely comfortable with the procedures followed.

My contact details are as follows:
Tristan Cornick

The contact details of my supervisor are as follows:
Sam Pretorius

Consent form for participants	
I, _____, agree to participate in the research conducted by Tristan Cornick about the relationship between green space and general well-being. The study aims to discover a positive correlation between green space and general well-being. In order to discover this relationship, two questionnaires, one on green space and one on general well-being will be utilised. This research has been explained to me and I understand what participation in this research will involve. I understand that:	
• I agree to be interviewed for this research.	
• My confidentiality will be ensured. My name and personal details will be kept private.	
• My participation in this research is voluntary and I have the right to withdraw from the research at any time. There will be no repercussions should I choose to withdraw from the research.	
• I may choose not to answer any of the questions that are asked during the research interview.	
• I may be quoted directly when the research is published, but my identity will be protected.	
Signature	**Date**

Annexure C: The 14-item Connectedness to Nature Scale

Please answer each of these questions in terms of the way you generally feel. There are no right or wrong answers. Using the following scale, in the space provided next to each question simply state as honestly and candidly as you can what you are presently experiencing.

1 = Strongly Disagree

2 = Disagree

3 = Neutral

4 = Agree

5 = Strongly Agree

_____(1. I often feel a sense of oneness with the natural world around me.

_____(2. I think of the natural world as a community to which I belong.

_____(3. I recognize and appreciate the intelligence of other living organisms.

_____(4. I often feel disconnected from nature.

_____(5. When I think of my life, I imagine myself to be part of a larger cyclical process of living.

_____(6. I often feel a kinship with animals and plants.

_____(7. I feel as though I belong to the Earth as equally as it belongs to me.

_____(8. I have a deep understanding of how my actions affect the natural world.

_____(9. I often feel part of the web of life.

_____(10. I feel that all inhabitants of Earth, human, and nonhuman, share a common 'life force'.

_____(11. Like a tree can be part of a forest, I feel embedded within the broader natural world.

_____(12. When I think of my place on Earth, I consider myself to be a top member of a hierarchy that exists in nature.

_____(13. I often feel like I am only a small 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

Annexure D: The 14-item Scales of General Well-being

Below you'll find fourteen statements about your experiences. Please indicate how true each statement is regarding the EXPERIENCES IN YOUR LIFE OVERALL. There are no right or wrong answers. Please, choose the answer that best reflects your experience rather than what you think your experience should be.

	Not at all true	A bit true	Somewh at true	Mostly true	Very true
1. I feel happy	☐	☐	☐	☐	☐
2. I feel energetic	☐	☐	☐	☐	☐
3. I feel calm	☐	☐	☐	☐	☐
4. I'm optimistic	☐	☐	☐	☐	☐
5. In my activities, I feel absorbed by what I'm doing	☐	☐	☐	☐	☐
6. I'm in touch with how I really feel inside	☐	☐	☐	☐	☐
7. I accept most aspects of myself	☐	☐	☐	☐	☐
8. I feel great about myself	☐	☐	☐	☐	☐
9. I am highly effective at what I do	☐	☐	☐	☐	☐
10. I feel I am improving	☐	☐	☐	☐	☐
11. I have a purpose	☐	☐	☐	☐	☐
12. What I do in my life is worthwhile	☐	☐	☐	☐	☐
13. What I do is consistent with what I believe I should do	☐	☐	☐	☐	☐
14. I feel close and connected to the people around me	☐	☐	☐	☐	☐

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Annexure E: Ethical Clearance Letter

THE INDEPENDENT INSTITUTE OF IIE EDUCATION

30 June 2020

Student name: Tristan Cornick
Student number: 17001953
Campus: Varsity College Cape Town

Re: Approval of Honours in Psychology Proposal and Ethics Clearance

HONOURS ETHICAL CLEARANCE LETTER

Your research proposal and the ethical implications of your proposed research topic were reviewed by your supervisor and the campus research panel, a subcommittee of The Independent Institute of Education's Research and Postgraduate Studies Committee.

Your research proposal posed no significant ethical concerns and your supporting documents and instruments are in order to proceed. We hereby provide you with permission to proceed with your research.

In the event of you deciding to change your research methodology in any way, kindly consult your supervisor to ensure all ethical considerations are adhered to and pose no risk to any participant or party involved. A revised ethical clearance letter will be issued.

We wish you all the best with your research!

Supervisor: Sam Pretorius

_____

Campus Postgraduate Coordinator (CPC): Dr Marizanne Grundlingh

_____

GENERAL CONDITIONS TO BE FULFILLED IN RELATION TO RESEARCH

Permission is granted to proceed with the above study subject to the conditions listed below being met and may be withdrawn should any of these conditions be flouted.

Please note: The panel has not considered the merits, accuracy or ethical soundness of the research. The only merits examined are the use of The IIE as a sample.

Permission is granted subject to the following conditions:

1. The researcher(s) will need to obtain informed consent in writing from all of the participants in his/ her sample if the study is not anonymous.
2. The researcher(s) may only use the data collected for research purposes and in no other way.
3. Photographs of human subjects may only be taken if relevant to the research, informed consent was obtained, and even with informed consent, the photographs may not be published on any online platforms.
4. The researcher is responsible for supplying and utilising his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institutions and/or the offices visited for supplying such resources.
5. No names or identifying information of participants may be used within the research and the research must be voluntary.
6. Please make it clear that the information will not be used punitively in any way and participants may in no way be counselled/advised based on this.