IBN HALDUN UNIVERSITY
SCHOOL OF GRADUATE STUDIES
DEPARTMENT OF COUNSELING PSYCHOLOGY

MASTER THESIS

NATURE RELATEDNESS, CAMPUS GREEN SPACE AND TIME SPENT IN NATURE AS PREDICTIVE VARIABLES OF COLLEGE STUDENTS' MENTAL WELL-BEING

ZEYNEP DOĞRU

THESIS SUPERVISOR: PROF. SEFA BULUT

İSTANBUL, 2020

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by
ZEYNEP DOĞRU

A thesis submitted to the School of Graduate Studies in partial fulfillment of the requirements for the degree of Master of Arts in Counseling Psychology

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APPROVAL PAGE

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Arts in Counseling Psychology.

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This is to confirm that this thesis complies with all the standards set by the School of Graduate Studies of Ibn Haldun University.

Date of Submission Seal/Signature

ÖZ

ÜNİVERSİTE ÖĞRENCİLERİNİN MENTAL İYİ OLUŞ DÜZEYLERİNDE YORDAYICI DEĞİŞKENLER OLARAK DOĞA İLE İLİŞKİDE OLMA, DOĞADA GEÇİRİLEN ZAMAN VE YEŞİL KAMPÜS ALANININ KULLANIMI

Yazar Doğru, Zeynep
Rehberlik ve Psikolojik Danışmanlık Yüksek Lisans Programı
Tez Danışmanı: Prof. Dr. Sefa Bulut
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Bu çalışmanın amacı mental iyi oluş ve doğa ile ilişkide olma puanlarının demografik değişkenler açısından nasıl farklılaştığını araştırmak ve doğa ile ilişkide olmanın, doğada vakit geçirmenin ve sosyoekonomik seviyenin Türk üniversite öğrencilerinin mental iyi oluş düzeyleri üzerindeki yordayıcı rolünü araştırmaktır. Bu çalışma aynı zamanda kampüs yeşil alanında geçirilen zamanı, yeşil alanının kullanım şekillerini ve karşılaşılan engelleri irdeleyerek kampüs yeşil alanının üniversite öğrencilerinin iyi oluşuna etkisini incelemektedir. Çalışmaya 404 (103 erkek, 301 kadın) üniversite öğrencisi katılım göstermiştir. Çalışmada Doğa ile İlişki ölçeği (DİO-21), Warwick-Edinburgh Mental İyi Oluş Ölçeği (WEMİOÖ), araştırmacı tarafından hazırlanan sosyo-demografik form ve kampüs yeşil alan kullanım formu kullanılmıştır. Araştırmada bağımsız örneklem t-testi, tek yönlü varyans analizi, Pearson korelasyon analizi ve hiyerarşik regresyon analizi uygulanmıştır. Bulgular, mental iyi oluş puanlarının demografik değişkenlere göre farklılaştığını, doğayla ilişkide olma puanlarının ise cinsiyet değişkenine göre farklılaştığını göstermiştir. Ayrıca, oldukça yüksek bir grup öğrencinin kampüslerinde yeşil alan bulunmadığı ve yeşil alanı olan öğrencilerden bekar olanların evli olanlara göre yeşil alanı daha çok kullandıkları tespit edilmiştir. Kampüs yeşil alanında en sık yapılan aktivitelerin sosyalleşme ve dinlenme ile alakalı olduğu ve kullanımda en sık karşılaşılan engellerin ise olumsuz hava koşulları, yetersiz yeşil alan ve yoğun olma durumları olduğu tespit edilmiştir. Korelasyon analizi, doğayla ilişkide olma, doğada zaman geçirme ve mental iyi oluş puanları arasında istatiksel olarak anlamlı ve pozitif yönlü bir ilişki olduğunu göstermiştir. Regresyon analizi ise doğayla ilişkide olma, doğada vakit geçirme ve cinsiyet faktörünün toplam mental iyi oluş puanlarındaki varyansın %14'ünü anlamlı

düzeyde yordadığını göstermektedir. Doğanın, mental iyi oluşa etkisinin gösterilmiş olduğu bu bulguların, alanda oluşturulacak projelere, psikolojik danışmanlara ve üniversite yönetimlerine katkısı olacağı düşünülmektedir.

Anahtar Kelimeler: Doğa ile ilişkide olma, Doğada geçirilen zaman, Mental iyi oluş, Üniversite öğrencileri, Sosyoekonomik statü, Yeşil kampüs

ABSTRACT

NATURE RELATEDNESS, CAMPUS GREEN SPACE AND TIME SPENT IN NATURE AS PREDICTIVE VARIABLES OF COLLEGE STUDENTS' MENTAL WELL-BEING

Student Name Doğru, Zeynep
MA in Counseling Psychology
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June 2020, 118 Pages

The purpose of this thesis is to investigate the differences on mental well-being and nature relatedness in terms of demographic characteristics and to examine the predictive role of nature relatedness, time spent in nature and SES on mental well-being of Turkish college students. This study also aims to examine the effects of campus green spaces on college students' well-being by questioning spent time within campus greenery, usage patterns and obstacles. Convenience sampling method was used, 442 participants were achieved. After excluding outliers and missing values the final sample composed of 404 participants (103 males, 301 females). Turkish versions of Nature Relatedness Scale (NR-21), Warwick-Edinburgh Mental Well-Being Scale (WEMWBS), sociodemographic form and campus green space form which were specifically designed by the researcher were used for data collection. Independent t-test, one-way ANOVA, Pearson correlation and regression analysis were conducted. The results indicated that mental well-being scores were statistically different with respect to gender, employment and marital status. There was also a statistically significant difference within nature relatedness scores in terms of gender. It was also found that a considerable number of students did not have any greenery at their campus area. Single students used campus green spaces more than married students. The most common activities which were held in campus greenery were the activities about socialization and relaxation. The most common obstacles about campus greenery were limited green areas, being busy and unfavorable weather conditions. Correlation analysis indicated that there is a statistically significant and positive relationship between nature relatedness, time spent in nature and mental well-being. The regression

analysis indicated that nature relatedness, time spent in nature and gender differences explained 14% variances of mental well-being and their contribution to well-being scores was significant. In the light of these findings, there will be some practical implications for counselors, university administers and future research projects to consider the positive effects of nature on students' mental well-being.

Keywords: College students, Green campus, Mental well-being, Nature relatedness, Time spent in Nature, Socioeconomic status

DEDICATION

To my beloved husband Bahadır Doğru
&
To the people who feel a deep love and connection towards nature

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There are many genuine supporters in my life whom helped me to create this thesis study. I want to thank them all my heart.

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Zeynep Doğru

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LISTS OF SYMBOLS AND ABBREVIATIONS

ADHD	Attention Deficit Hyperactivity Disorder
F	F Statistics
HT	Horticultural Therapy
NBT	Nature Based Therapy
NR	Nature Relatedness
SD	Standard Deviation
SES	Socio-Economic Status
OECD	Organization for Economic Co-operation and Development
UNICEF	United Nations International Children's Emergency Fund
WEMWBS	Warwick-Edinburgh Mental Wellbeing Scale
WHO	World Health Organization
B	Beta
$\bar{X}$	Mean
%	Percentage

CHAPTER I

INTRODUCTION

The relationship between humans and nature has always been considered as very old and rooted. Human beings have been shaped by nature and nature as well has been shaped by human beings in this reciprocal relationship. Throughout history, human beings have used the elements within nature -like harvesting plants, ranching animals and using wind, sun and water resources- to compensate their basic survival needs (Czarnezki, 2011). People have always considered natural elements such as compatible climatic conditions while finding shelters and constructing their living settings like villages, towns and cities. It can be seen that in every kind of way, humans have lived harmoniously within nature to survive. Many people argue that this rooted relationship with nature not only serves for survival needs but it also has various positive effects on human health. Today, it is known that nature causes benefit for people's physical, psychological and mental health (Seymour, 2016). Besides, when human history is being analyzed, it can be seen that the belief that Mother Nature is good and bestows benefits on humans has a long history. Examples of this phenomenon can be seen in the historical records like gardens of merchants in medieval Chinese cities or Persian settlements surrounded by gardens in Mesopotamia. These historical places have indicated the human attempt to contact with nature, explicitly (Kellert & Wilson, 1993).

This attempt of having contact with nature can be seen not only in ancient times but also in modern times, as well. In 1980's, in order to connect to nature, Japanese people propounded a concept which is called as "Shinrin-Yoku". Shinrin-Yoku, literally means 'forest bathing' and it is a practice of letting selves to the pure nature, physically and spiritually (Özgün & Özgün, 2019). It can be said that like in ancient times, being exposed to nature strengthens human well-being and decreases the stresses of urban living has been discussed in many countries, especially during last two centuries (Kellert & Wilson, 1993).

These last two centuries also present the least contact or relationship with nature of human-beings compare to all other times in human history. In these last two hundred years, urbanization increased rapidly and people started to commoditize nature. Like Czarnezki (2011) mentioned, after nature had been commoditized, humans started to look at nature differently. They started to see themselves as outsiders of nature. They started to use nature like a commercial good to merchandise. Human beings started to live not within nature but against it (Czarnezki, 2011).

Today, the majority of the world lives in urban areas likes cities and towns (Clark, 2004). These urban areas have some artificial living settings which are designed without natural context. Nowadays, it is very common and usual for people to live in small apartments which do not have green areas or open views. It's very usual for an urban citizen to transport without seeing daylight. This modern way of living can damage the connection between human beings and nature by distracting people unaware of potential benefits of nature. As a result of this situation people miss cognitive and well-being opportunities that nature provides (Nisbet & Zelenski, 2011).

Children and youth in cities and towns are familiar with massive concrete school buildings, but they are unfamiliar with the plants, animals and environment around them. In 2012, UNICEF published a detailed report about the state of the urban world's children. They reported that access and exposure to natural landscapes like trees has a positive impact on children's social, psychological, physical and mental health (UNICEF, 2012). Like children, youth are also affected by the urban way of living and lesser contact with nature. In a study which was conducted in Turkey, it was found that college students who are less related to nature have higher levels of depression, anxiety and stress and vice versa (Sarıçam, Şahin & Soyuçok, 2015). In addition, studies have also indicated that the time which is spent in nature has lots of benefits for human lives. It reduces crime, reinforces family connections and neighborhood ties, helps new immigrants to cope with the adaptation and decreases domestic violence (Mitten, 2009).

Because of the fact that nature serves as an important physical, social and psychological role in human's lives, there is an intense interest in academic researches to examine the relationship between nature or green spaces and mental health

(McCormick, 2017). This thesis study focuses on nature's role on college students' mental well-being by examining nature relatedness and time spent in nature along with green campus space, socio-economic status and other demographic variables.

1.1. Problem Statement

As human common sense suggests, nature is beneficial for human-beings, physically, mentally, psychologically and even spiritually. Although this goodness or benefits of nature are well known, there is not adequate scientific research to investigate and prove it, thoroughly. Specifically, there has not been adequate scientific research to investigate the effects of this unique relationship between human and nature especially on youth's mental well-being.

If the world progresses as it has in last two centuries, it can be said that human beings will drift apart from nature more and more. That is why, it is a big problem to know the ways to restore the human- nature relationships and master the particulars of it on young generations to be able to have a bright and healthy future.

Another problem is that, Turkey, the country which this study took place in, has a rapid urbanization especially in last five decades and this rapid separation from rural areas to urban areas and being drifted away from nature have some unclear psychological effects on the youth. This study tried to make these problematic effects clear, by searching a significant relationship with nature relatedness and mental well-being level on youth.

There is also an urgent need for the Turkish education system to be able to explain the importance of nature and its function to children and youth. The inadequacy of environmental education can be seen in Turkish cities which do not have adequate green spaces and in most Turkish schools which sometimes do not even have a single tree in their yards. This is the sign of the weakness in theoretically given information and lack of practical implications. Hence, the schools which are surrounded by concrete buildings prevent students to relate with nature (Özgün & Özgün, 2019).

Furthermore, young people who are educated at higher levels in the universities are precious for the society's growth. There is not adequate scientific study to research on this specific group's well-being characteristics. Well-being is a very important component to understand and it is considered a subject of positive psychology. Positive psychology has received more attention, especially in the last few decades, in its ability to increase the quality of human life, and the study of why people experience happiness has been examined using different variables. Although, human-nature relationship is very important to comprehend to understand happiness, it has not received much attention in positive psychology (Gerofsky, 2016).

In addition, it can clearly be said that because of the reasons like fierce academic competition, achieving academic success and future career goals there is an increase in the pressure and the stress levels of the university students more and more. Stress and pressure can have a negative impact on the mental health of college students whose bodies and minds are at critical developmental stage. This problem can be eliminated by changing the structure of the university campuses and by doing so, benefit from nature's healing power (Lau and Yang, 2009). Furthermore, stress levels of the university students were found very high because of the various reasons like; transition to college life, taking difficult exams and homework, pressure of studying and social and relational problems with their peers and members in their universities (Seitz, Reese, Strack, Frantz, & West, 2014). Although a large body of research had shown that university students experience stress and other psychological disturbances excessively and there are some attempts to decrease student distress, there is only a very limited attempt and research to identify the positive effects of nature relatedness and green spaces on their well-being at the university campuses which students spend most of their time within.

1.2. Research Questions

In order to investigate the predictive variables of mental well-being level of college students and to be able to find any significant relationship between nature relatedness, SES, time spent in nature and mental well-being, this study has some main questions and subquestions:

1-What are the mean scores of nature relatedness, time spent in nature, mental well-being and SES of the college students?

2- What are the usage patterns, obstacles and amount of time spent in campus green space among college students?

3- Does nature relatedness, mental well-being, time spent in nature and SES differ among college students according to their;

- Gender
- Age
- Employment
- Marital Status
- Education degree

4- Is there any significant relationship between nature relatedness, mental well-being, time spent in nature and SES among college students?

5- Is there any significant relationship between the three subdimensions of nature relatedness, mental well-being and time spent in nature?

6- Are nature relatedness, time spent in nature, and SES predictive variables for mental well-being of college students?

1.3. Purpose of the study

The purpose of the current study is to examine the relationship between nature relatedness, time spent in nature and mental well-being among college students. The independent variables are defined as nature relatedness, time spent in nature along with socioeconomic status. Nature relatedness of the participants was measured by Nature Relatedness Scale (NR-21) which was originally developed by Zelenski, Nisbet and Murphy (2008) in Canada. In this study, a Turkish version of NR which was adapted by Çakır, Karaarslan, Şahin and Ertepınar (2015) was used. Time spent in nature, existence of green space in campus and socioeconomic status were asked with open ended questions. The dependent variable of this study is defined as mental well-being and it was measured through Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) which was developed by Tennant et al. (2007) in United Kingdom. Again, for this study, a Turkish version of the scale which was adapted by Keldal (2015) was used. Also, this study aims to examine the effects of campus green space on students' well-being by questioning the time spent in campus greenery, common

activities which are held in campus greenery and the obstacles about using the campus greenery. It was expected that being more nature related, spending more time in nature, having green space in campus and having high degree of SES would increase the mental well-being levels of college students. Socioeconomic status was added to the research for its important role for human well-being. In this study, nature's contribution to human well-being was tested to detect, in a numerical scientific way, this important contribution to well-being with the aim of making a contribution to the understanding of our deep needs as human beings in 21th century.

1.4. Significance of the Study

A study that explores the effects of nature on young educated students' mental well-being is important for several reasons. First, understanding the relationship among nature relatedness and mental well-being can help to reveal the underlying mechanisms of positive psychology like resiliency. It contributes the field of positive psychology and by focusing on human strengths.

Second, it is very important to have an investigation on college students because these young people will be the building blocks of our future societies. If we can find any instrument to contribute their well-being, it will improve the society itself.

Third, given the fact that lives of college students can be very stressful and they can experience high amount of pressure, a study which focuses on the benefits and healing power of nature on these students can eliminate the possible mental health problems and it can contribute the mental health of university students.

Fourth, mental well-being of the people who are in higher education ought to be examined in order to help them benefit most efficiently from their education. With this way, a contribution to academic success of the college students can be achieved.

Fifth, this study will give an emphasis on how crucial nature is to people's lives; it might change people's perspective about nature. And maybe with this new perspective, human beings would alter their living settings and conditions. As humans, we may choose to live compatible with nature and it may affect and change our architectural,

economic and educational systems and we can find a balanced style of living in urban places.

Sixth, this study is expected to contribute the research field by examining the variables which have not been examined and investigated in this way. There are limited research about subjective and psychological well-being and nature relatedness but there is not any specific study which researches mental well-being and nature relatedness including time spent in nature and usage of green campus space on college students.

Seventh, there is a limited opportunity for college students to experience their environment and to connect with nature because of the intense urbanization. That is why, it is very critical to examine how campus environment and being nature relatedness contribute to their mental well-being particularly within their immediate surroundings.

Finally and eighth, this study is very important to the country that the research was conducted in. Although there is a huge need to explain the importance of nature relatedness to people who are faced with intense urbanization in this country, this subject and these variables have not been studied scientifically in Turkey. That's why, this study will contribute to this limited research field in Turkey by examining the local data.

1.5. Assumptions

It was assumed that college students who participated in this study gave sincere answers to the surveys; Nature Relatedness Scale, Warwick-Edinburgh Mental Well-being Scale and socio-demographic form and green campus space form which was specifically designed for this study. In addition, it was also assumed that SES, time spent in nature and nature relatedness are the main predictive variables for mental well-being levels of college students.

1.6. Definitions of the Major Elements in the Study

1.6.1. Nature Relatedness

The term of nature relatedness was defined by Nisbet, Zelenski and Murphy,

> Nature relatedness (NR) describes individual levels of connectedness with the natural world. NR is an appreciation for and understanding of our interconnectedness with all other living things on the earth. NR is distinct from environmentalism in that it is comprised of much more than activism. Nor is it simply a love for nature, or enjoyment of only the superficially pleasing facets of nature, such as sunsets and snowflakes. NR is an understanding of the importance of all aspects of nature, even those that are not aesthetically appealing or useful to humans, such as mosquitoes, mice, death, and decay (2008).

1.6.2. Mental Well-Being

The other term which will be discussed in this research is mental well-being. Mental well-being is defined as in the following statement,

> Mental well-being is associated with individual's positive self-perception, self-contentment even when aware of limitations, ability to develop trusting and warm interpersonal relationships, ability to shape the environment in a way to fulfill his/her needs and desires, ability to act autonomously and independently, effort to find a purposeful and meaningful life, awareness of his/her capacity and efforts to improve this capacity (Keldal, 2015).

1.6.3. Socio-Economic Status

Socioeconomic status (SES) is defined as in following statement; "SES indicates one's access to collectively desired resources, be they material goods, money, power, friendship networks, healthcare, leisure time, or educational opportunities. And it is access to such resources that enable individuals and/or groups to prosper in the social world" (Oakes & Kaufman, 2017).

1.6.4. Time Spent in Nature

Many studies indicate that people can have different concepts about nature within their mindsets (Dornhoff, Sothmann, Fiebelkorn & Menzel, 2019). Hence, in the present study, usage of the exact definition of nature was purposely avoided. Instead, college students' subjective meanings about nature was tried to achieve. Nature can be viewed as greenery, outdoor or wild/pure areas like forests and woodlands in the current study. Time spent in nature was asked through one item which covers some of the different concepts about nature. However, this single item can be considered as a limited indicator about measuring time spent in nature and this fact must be taken into consideration when interpreting the results.

1.6.5. Campus Green Space

In the present study, college students' perceptions, usages and obstacles about campus green spaces were held. Subjective meanings of participants about campus green spaces were attained. Campus green spaces can be viewed as a square with vegetation, forests, lakes, seaside, river, park, garden etc. at the campus area. Regarding the existence of the campus green spaces, college students stated their time spent in campus green spaces, the activities that they held in these spaces and obstacles about accessing campus greenery.

CHAPTER II

LITERATURE REVIEW

In this chapter, human-nature relationship was covered by examining nature's role in the modern world, its function as a remedial tool and its effect on human well-being. The biophilia hypothesis was also covered to be able to deepen the literature review. Also, nature-based education, green campus structures, and socio-economic status and their relation to well-being of college students were covered. Turkish-Islamic perspective about nature was also mentioned to understand the religious and cultural perspectives about the nature in this study's homeland; Turkey. Studies which were conducted in Turkey were included in these sections as well as the studies which were implemented across different countries in the world.

2.1. Nature in the Modern World

Human beings, in today's world have drifted away from nature more and more. There are plenty of reasons about this alienation. Urbanization, modernism, use of technological tools and the global culture which influence the world in 21st century can be interpreted as some of these reasons.

Human beings are more urbanized than before. Today, most of the world's population lives in cities and towns (Clark, 2004). Due to this fact, people have fewer opportunities to have contact with nature and other living organisms. This extinction of nature from the daily lives of humans has started to be questioned in academia and by researchers who have tried to understand the nature-human relationship in various different ways (Dean et al., 2018). City life or urban design makes it difficult for people to have a connection with nature because urban places have little or no green spaces compared to rural areas. There are plenty of researches about this transition to cities and towns and the importance of natural settings in human life. A particular study found that natural settings matter for human life and that the presence of nature for humans is significant (Hartig, Evans, Jamner, Davis, & Gärling, 2003). 112 college

students from California participated in this study. It was found that the students who have a regular walk in the presence of nature have better cognitive and emotional outcomes than students who have regular walk in urban areas (Hartig et al., 2003). A very similar study had been conducted by Mayer, Frantz, Bruehlman-Senecal and Dolliver (2009) in Ohio, United States. The researchers compared the effects of 15-minute walking in natural setting versus 15-minute walking in urban setting among undergraduate students. They have found that emotional well-being of the students increased with the exposure of nature compared to urban places (Mayer et al., 2009).

Another reason that people are separated from the natural environment is modernism. Modernism which is a form of capitalism tries to achieve the maximum amount of profit by forcing people to a limitless consume. The consciousness of the human mind is shaped by the instinct of possession. As a result, everything around human beings started to be seen as products to consume. This 'civilized' human who has consummatory behavior began to see mother nature not as a living source of life but as a goods (Çukur & Özgüner, 2008). It can be said that modernism has changed the human perspective about nature and this alteration caused modern human beings to be alienated from Mother Nature.

Even though technological process has been considered positively since the industrial revolution, one must not forget that there is one more side of the coin. Use of technological tools is one of the biggest reasons to have a negative relationship with nature. In our modern time, the negative effects of the intense and fast technological improvements have especially manifested itself on children and youth. Children and youth spend time in indoors more than any other times in the world's history and they are engaged with technological tools like televisions, phones, computers for most of the day. The price of this new life style appears as youth's physical and psychological problems like hyperactivity, obesity and attention deficit problem (Özgün & Özgün, 2019). Rosenow (2008) defined this situation as "Young children are growing up more familiar with wireless BlackBerrys than wild blackberries". In order to understand and overcome this situation, lots of studies were conducted and it was observed that there is a healing effect for children and youth to be connected with nature (Louv, 2017; Özgün & Özgün, 2019). The author of 'Last Child in the Woods', Richard Louv (2017, p.34) contributed to literature with the concept of 'nature deprivation'. According to

Louv (2017), the last child in the wood is an endangered species and it must be protected. He then explained that health of children and health of nature are tightly connected to each other. The author highlighted the importance of spending time in nature and nature play for children. According to Louv (2017), it is a great investment to give children the opportunities to spend time and relate within nature for their physical, social and psychological health.

Besides excessively using technological tools, the dominant global culture which influences today's world is one of the reasons for being drifted away from Mother Nature. In many aspects of our global culture, people have been taught not to spend time in nature. Children and youth do not spend time in nature because they grew up in artificial settings and nature seems unfamiliar to them. Parents are worried about their children's safety when it comes to play in natural settings. Movies, stories and news portray nature as an evil creature or an enemy. Even in some outdoor television programs, people talk about nature as if it is something to conquer or dominate. In the last centuries, human beings have faced dramatic changes in their living styles, after the industrial revolution they needed to adapt to the technological era in a very short period of time. Modern human beings have no encounter with nature in their daily lives except of big disasters like; floods, hurricanes, earthquakes and droughts. All of these facts which were caused by modern global culture contribute to people developing phobic attitudes toward nature (Mitten, 2009).

2.2. The Biophilia Hypothesis

Even though some factors which have been mentioned in the first section have caused human beings to alienate from nature, there are some strong evidences and theories about the deep-rooted past of this unique relationship between human beings and Mother Nature. The biophilia hypothesis can be the answer and it can explain the reasons behind this rooted and strong relationship between human and nature.

Edward Wilson is the mastermind of this hypothesis. According to Wilson and his colleague Kellert (1993, p.2), biophilia can be described as "the innate tendency to focus on life and lifelike processes." In the book of 'Biophilia Hypothesis', Wilson and Kellert (1993) explained the concepts of biophilia. As Wilson suggested, biophilia causes humans to have a constant affiliation to other living creatures. In some terms,

Wilson (1993) claimed that the biophilia hypothesis was derived from a pure evolutionary logic. Humans have lived in hunter-gatherer societies for more than 99% of their history and they have innately attached to other living organisms. The human brain evolved in a biocentric world; It has not evolved through a machine regulated world.

This hypothesis is explained explicitly by the example of relationship between humans and snakes. Snakes, especially the poisonous ones, cause harm like sickness and death to primates and mammals throughout the world. Monkeys and apes have been alert to the dangers of snakes since ancient times, and they have developed a unique way of communication to warn each other about the presence of snakes. Humans have also been genetically averse to snakes. Human beings tend to develop fear, or sometimes more than fear, they develop a phobia about snakes, even though they barely meet snakes and there is not enough negative reinforcement to build it. Actually, humans can easily develop phobias about the elements in the natural world like phobias of spiders, dogs, heights, snakes, running water and closed spaces. Human beings are also fascinated by the snakes, throughout the history. They create myths, histories, and symbols about snakes and include it in their religions and teachings. Modern humans pay entrance fees to zoos and circuses to be able to see different kind of snakes. Humans have also dreamed about snakes and serpents in their sleep more than any other kind of animals. Biophilia hypothesis claims that this relationship with snakes has been caused by a constant exposure and a repeated experience through evolutionary time. This fascination and aversion about snakes have been hereditarily encoded in humans and it manifests itself through dreams, visiting zoos and developing phobias about it (Kellert & Wilson, 1993, p.25).

There are also some evidence of biophilia in human daily lives like gardening, popular outdoor wilderness activities and human-animal relationship (Nisbet, 2011). Languages can be considered as the vivid examples of biophilia hypotheses. In order to represent feelings and thoughts, human beings have used words from nature across cultures and throughout the history. Animal symbolism can be a good example about this subject to describe human emotions, to describe other humans, their personality and their behavior. In English, people describe busy people as ‘busy as a bee’ and in Turkish, people describe hardworking people as ‘hardworking as a bee’. Although the

meaning of these symbols can change across cultures, it has existed in human expressions and language since the beginning of human history (Nisbet 2011).

There are also other viewpoints which claim that biophilia was caused by human's survival instinct. Because before today's 'modern' world, in order to survive, early human beings had to understand benefits and harms of Mother Nature. That is why, biophilia and biophobia can actually serve humans as practical advantages about surviving (Nisbet, 2011).

Other than the functions of surviving, the biophilia hypothesis also highlighted that human beings depend on nature not just for physical and material sustenance but also intellectual, aesthetic, cognitive, spiritual meaning and satisfaction. It means humans need nature not just for her physical needs but also to develop themselves cognitively, spiritually, emotionally and even aesthetically (Kellert & Wilson, 1993).

In 1976, Kellert (as cited in Kellert & Wilson, 1993) described and classified nine perspectives of nature which biophilia hypotheses suggested. These nine perspectives include; Utilitarian, Naturalistic, Ecologistic-Scientific, Aesthetic, Symbolic, Humanistic, Moralistic, Dominionistic, and Negativistic experiences within nature. All of these values and perspectives have some functions for human beings and they meet variety of human needs from nature. Utilitarian perspective means practical and material exploitation of nature and it provides human security and psychical maintenance. Naturalistic perspective gives direct contact with nature which results in satisfaction and it provides mental and physical development, outdoor skills and curiosity for human beings. Ecologistic-Scientific perspective gives systematic study of nature and in return, it provides observational skills, knowledge and understanding. Aesthetic perspective means beauty of nature and it functions as peace, harmony and security. Symbolic perspective means the use of nature for language and expressions through metaphors as cited in the previous paragraphs and it enhances human communication and mental development. Humanistic perspective means a very strong affection, connection and love for nature and it induces group cohesion, cooperation and sharing. Moralistic perspective includes an ethical concern for nature and in return it functions as kinship, order and meaning in life. Dominionistic perspective of nature means physical control and dominance of nature and it leads

humans to gain mechanical skills and physical power and control. And lastly, negativistic perspective of nature means fear and alienation of nature and it leads human to have security, safety and protection. (Kellert & Wilson, 1993, p.36)

There are some scientific research and studies about biophilia have been carried out around the world. Yılmaz and Olgan (2017) have conducted a very significant study about biophilia and biophobia levels of little children in Ankara, Turkey. Researchers had highlighted that although there are plenty of studies about biophilia levels of adults, there has not been adequate study to research the same issue on children. First of all, they tried to adapt the Children's Biophilia Measure into Turkish and during the translation process they cared not only for Turkish characteristics but also children's capacity to understand. The researchers picked four schools in the same district and they categorized these four schools into two on the basis of having or not having green areas like having a large garden and lots of trees. They implemented the Turkish version of Children's Biophilia Measure to 105 kindergarten students whose ages were in between 60 and 66 months. They have analyzed the quantitative data and found no significant difference between gender and school environment (nature surrounded and not surrounded with nature) within children's biophilia level. They have found that all of the participants from different school environments and different genders had a high degree of biophilia. After that, they implemented a qualitative research of 20 students which were randomly selected from the main participants. They interviewed these children about the items of Children's Biophilia Measure and they tried to achieve common statements. The researchers have found that culture and especially mother attitudes towards nature are remarkably significant for having biophilia and biophobia.

Other research about the biophilia hypothesis simply highlighted that this innate need within human beings can be met when they spend time in nature, and it may negatively affect humans when they are deprived of nature (Gerofsky, 2016). There is plenty of research, some of which will be discussed through this paper, to support the biophilia hypothesis such as, for example, relating with nature and the effect of this on reducing depression, anxiety and stress level (Sarıçam et al., 2015) or nature relatedness and its contribution to subjective well-being (Nisbet, Zelenski, & Murphy, 2011).

2.3. Nature as a Remedial Tool

Nature has been considered as a healing or recovery tool for human health since the very early ages of human history. In the ancient times, especially in Far East cultures and in India, people had started to use nature for religious purposes like reaching nirvana and falling into trance. Many centuries later, nature started to be seen as a healing tool for humans' souls. Nature is still very important for meditation practices. In more recent times, nature was used in the area of psychotherapy as nature-based therapy/ecopyschotherapy and as horticultural therapy. Researchers have tried to find nature's impacts on people who have clinic psychological disorders (Sarıçam & Şahin, 2015).

2.3.1. Nature Based Therapy/Ecopsychotherapy

Nature based therapy (will be mentioned as NBT for the rest of the paper) can be defined by Weaver (2015) as "NBT is a project-based and goal-oriented approach to traditional mental health therapy, taking therapy out of the confines of an office and into the natural world. It combines being with nature and doing service within the context of mental health therapy." NBT programs may involve practices like animal assisted therapy, care farms, green exercise and wilderness therapy to make people to reconnect with nature and to be able to get benefit from nature's positive effect on human health (Weaver, 2015).

Sahlin (2012) and her colleagues mentioned that people who are in contact with nature were affected both physiologically and aesthetically and this impact changes human's mood and it is useful as a remedial tool for stress related disorders. On the basis of this perspective, nature-based therapy programs were developed all over the world. In Sahlin's study, with the assistance of Swedish University of Agricultural Sciences, a specific nature-based therapy program (NBT) was developed for emotionally disturbed patients. The program consisted of simple activities for patients within nature, and it offered them an opportunity to experience different landscapes to contribute to their recovery. The researchers believe that these patients' capacity would be restored if they could participate in an NBT rehabilitation program. Participants of this study were 11 people who attended NBT program. To get the data, semi-structured

interviews were conducted and to perceive more detailed information, Interpretative Phenomenological Analysis (IPA) was used. Due to the fact that this was a qualitative research, results were not explicit. According to researchers, nature serves a very important supportive treatment for psychological disturbances. And the participants to different degrees learned how to deal with their everyday life and job situations after these programs (Sahlin, Matuszczyk, Ahlborg & Grahn, 2012).

Another research which was conducted by Feral Crystal-Helen in 1999 demonstrated another impact of the nature-based therapy. She tried to study the relationship between ecopsychotherapy and emotional well-being on emotionally at-risk children. It was an experimental study. The researcher, first of all, had implemented a model program for emotionally at-risk children. Participants were 17 students whose school class ranged from 4th through 8th grade. These students were analyzed as having emotionally disturbed attitudes. Another group of students was selected as a control group, as well. The researcher implemented pretest-posttest to both of the groups. Human drawing test –to measure emotional and cognitive development- and the Piers-Harris Children's Self-Concept Scale -to measure self-esteem- were used as instruments. After the pretest procedure, the researcher along with a mental health professional and a science teacher implemented the sessions which include ecopsychotherapeutic methods. The complete program consisted of six sessions. The researcher and her colleagues had also observed and recorded the explicit behaviors of children during and after the program. The results were quite pleasant. After the program, positive emotional development was obtained through tests and observations. Educational, emotional, behavioral, neural and physical development was gained (Crystal-Helen, 1999). Like in Sahlin et al. (2012), this study has also indicated the power of nature on eliminating psychological difficulties and increasing emotional well-being on children, youth and adults.

2.3.2. Horticultural Therapy (HT)

Close to nature-based therapy programs, horticultural therapy programs are widely used in the world. Horticultural therapy was defined by Wichrowski and his colleagues (2005),

> Horticultural therapy is a process through which plants, gardening activities, and innate closeness to nature are used as vehicles in therapy and rehabilitation programs. It is utilized for physical, cognitive, social, emotional, and recreational benefits. In practice, HT combines the therapeutic nature of a specially designed environment with activities aimed at meeting the therapeutic needs of the particular population served. Although the therapeutic use of horticultural activities has been practiced for hundreds of years, objective documentation of its benefits is relatively recent.

Airhart, Doutt and Willis (1988) from Tennessee Technological University conducted a research to investigate the effects of the horticultural therapy activities on the education of elementary students who need special education. Airhart and his colleagues implemented two types of horticultural sessions in the mornings and in the afternoons. These sessions included farm tour, plant anatomy, water cycle, transplanting etc. As in the previous researches about horticultural therapy suggested, this therapy type had provided benefits to students who need special education. Although the research methodology and results were not specified in this study, the researchers claimed that horticultural therapy activities and sessions were very successful with children who need special education (Airhart, Doutt & Willis, 1988).
It can be said that NBT programs and HT programs have plenty of similarities and they aim at similar objectives. These programs can also be used to eliminate negative symptoms of mental disorders, to increase physical, mental and emotional development and to ameliorate the quality of education.

2.3.3. An Example About Horticultural Therapy in Turkish History

Even though horticultural therapy or nature-based therapy has been considered in the field of modern psychology for last fifty years, the country, Turkey in which this thesis study had been conducted is not unfamiliar with this concept. There are plenty of examples in Turkish history to get benefit from nature as a remedial tool for physical, emotional and mental diseases. The hospital of Bayezid II which was located in Edirne is a good example about this subject in the Ottoman Empire which was a former state of Turkish people before The Republic of Turkey.

Edirne was a very important town in the 15th and 16th centuries. Edirne was the center of the state and it had been the second capital city of the Ottoman Empire. That’s why,

there were numerous sanctuaries, educational buildings and monumental buildings in this city. One of the important buildings of Edirne was the Islamic-Ottoman social complex of Bayezid II. This social complex included a mosque, school, almshouse, soup kitchen, bathhouse, storehouse of provisions and a hospital. The purpose of this social complex was to make Edirne the health center of the region (Bulut, 2015).

The Turkish-Islamic hospitals, called as 'darüşşifahane', which were authentically built across India to Spain were considered pioneering institutions in the cure of psychosomatic diseases and in developing treatment for psychiatric illnesses. These hospitals or *darüşşifahanes* were the health centers for all kinds of diseases. Mentally ill patients were not discriminated against and instead carefully recovered in these hospitals. There was a special place just for mentally disturbed patients in the hospital at the social complex of Bayezid II, as well (Terzioğlu, as cited in Bulut, 2015).

The hospital at the social complex of Bayezid II is considered to be one of the first health institutions in history which treated psychological diseases by using different methods. In this hospital, techniques and knowledge of the medicine of that period was used as well as the sound of music and sound of water as remedial tools. The hospital was the number one center for music therapy during that era. Music was used systematically to help patients recover which had never been done like this before in history. Along with musical instruments, the sounds of water were used to increase the efficacy of the treatment (Şengül, 2008).

In this hospital, there were internal courtyards and gardens as well as pools and fountains. In these gardens, there were also some specific flowers which were believed to give peace and relaxation to the hearts of patients. Turkish people during that era knew about the beneficial effects of nature and successfully used it to recover their health. They cared about being related to nature and living harmoniously with it. They always kept nature close to their lives by building gardens in the hospitals, in the mosques and houses. They had also raised flowers not just for the flowers' beauty and nice smells but also to be able to live healthy and to create medications with them (Nemlioğlu, 2009).

Furthermore, the location of the hospital at the social complex of Bayezid II indicates the viewpoint of the authorities about nature. The hospital was built nestled within nature. It was built beside the river of Tunca and a bit far away from the city center. The hospital included natural view and had a peaceful silence. It was located where the river and pure nature intersected (Bulut 2015). The mentally ill patients were able to achieve benefit from music as well as the natural view, the sound of water, the effects of flowers and plantations and the activities like walking beside fountains and internal gardens at this center. It can be said that even before six hundred years ago, nature had been used as a remedial tool for the patients who suffered from mental and emotional related disorders in these lands.

2.4. Nature Relatedness and Well-Being

It is not a new notion that there might be a very important effect of environment, time spent in nature and being nature related on human well-being. Nature relatedness can be defined as "understanding the significance of nature with all aspects within" (Nisbet, Zelenski, & Murphy, 2008). Nisbet et al. (2008) created this definition about being nature related and they conducted extensive research about how it helped to increase human well-being. In this section, the works of Nisbet and her colleagues will be explained as well as other studies which highlight the same phenomena all around the world.

Researchers, Nisbet, Zelenski and Murphy (2011) have studied the relationship between nature relatedness and human well-being in Canada. NR scale, Psychological Well-Being Inventory and Positive and Negative Affect Schedule were used in this research. 184 undergraduate students were participants of this study. In order to generalize the findings, the researchers had replicated the study with the participation of 145 business people. They have found that there was a strong and significant connection between NR and positive affect, autonomy and personal growth. After the findings of these studies, it was suggested that a powerful connection to nature can increase human well-being (Nisbet, Zelenski, & Murphy, 2011). This study indicates that being nature related is not just effective for the well-being of the college students but for the older social groups, as well.

However, in order to examine the impact of nature relatedness on well-being of different social groups, the study of Dean et al. (2018) must be considered first. The researchers had surveyed 1538 people in a district of Australia, Brisbane in 2018. Their data was quite representative because they used the method of stratified sampling and included different social groups in that city. They used various surveys like NR scale, the Depression Anxiety Stress Scales, Self-Reported Health Scale and Socio-Demographic Indicators Scale. They have found that people who have higher scores from NR scale are likely to be older, female, not working and do not have any children who needs to be taken care of inside the house and speak English as their main language. They also found that people who have higher scores from NR scale were less likely to develop a mental illness like depression, anxiety or stress. These participants also reported that they have fewer negative symptoms about their physical health. It can be said that the findings of this study have supported the findings of the study of Nisbet et al (2011).

Furthermore, the effect of NR on well-being can be seen not only in survey designs but also in experimental designs. Another research which was conducted by Elizabeth Nisbet is an experimental design that shows the positive relationship between nature relatedness and well-being. A total 17 participants completed the weekend expedition in nature and pretest and posttest design were used. Participants completed Positive and Negative Affect Schedule, Nature Positive Affect Scale, Vitality Scale, NR Scale and Inclusion of Nature in Self Scale. The results were quite remarkable. After this weekend expedition, participants showed an increase in well-being, positive affect, vitality and their negative affect decreased. In addition, significant increase in nature relatedness and inclusion with nature were achieved by the participants after the implementation (Nisbet, 2014).

Another interesting experimental study was conducted in Uganda in 2014 by Johnson-Pynn and her colleagues to study the effects of nature experiences on social and psychological skills of Ugandan youth. The researchers tried to investigate the effects of environmental education workshops on self-efficacy, civic attitudes and relationship with nature. The researchers selected 133 young people whose ages ranged from 16 to 24 years. As a pretest and posttest methodology, before and after the workshops the researchers applied some surveys to measure perceived relationship

with the natural world and to measure perceived self-efficacy and skills. According to results, participants' scores increased after the workshops which were implemented within nature. Positive scores of rural living youth increased more than urban living youth and also scores of male participants increased much more than female participants (Johnson-Pynn, Johnson, Kityo & Lugumya, 2014). Although this study has supported the study of Nisbet (2014) it gives more details about the effects of the experiences within nature on well-being.

In addition, although there are some researches like Johnson-Pynn et al. (2014) and Nisbet (2014) which focused on the positive effects of nature-based activities experimentally, there are still some unknown reasons behind these positive effects. For example, in their study, Loureiro and Veloso (2014) claimed enhanced well-being or positive psychological outcomes may not be caused by simply being in a nature setting but instead be due to practicing the physical activity itself.

In order to eliminate this uncertainty, Lawton Brymer, Clough, & Denovan (2017) conducted a distinctive and an enlightening research. The researchers examined the impact of physical activity on psychological well-being for those who are regular exercisers. 262 participants from United Kingdom had been surveyed through Nature Relatedness Scale, Psychological Well-Being Scale and the trait section of the State Trait Inventory for Cognitive and Somatic Anxiety. The participants were chosen according to meeting the criteria of United Kingdom physical activity guidelines which indicates that they had weekly physical exercises. The results showed that participants who exercised outdoor physical activities have higher nature related experience and they reported lower somatic anxiety levels. Although, no significant relationship between well-being and physical exercise was found, this study has proved that physical activity outdoors or in natural settings has better outcomes for psychological health than physical activity in indoors (Lawton, Brymer, Clough, & Denovan, 2017).

Even though there are some studies – either survey design or experimental design that examine the relationship between NR and well-being, there is a lack of research studying NR and well-being and there is a lack of research to study NR and different aspects of positive psychology like trait emotional intelligence. A research was

conducted by Gerofsky (2016) to investigate the relationship between nature relatedness, trait emotional intelligence and well-being. The researcher highlighted that although there are some studies that examine the relationship between NR and well-being or trait emotional intelligence and well-being, there is a lack of research that investigates the relationship between NR and trait emotional intelligence and their contribution to well-being. The researcher selected 315 participants from different countries and used Nature Relatedness Scale, Trait Emotional Intelligence Questionnaire and five other well-being questionnaires. The results showed that Trait emotional intelligence and NR were strongly associated and all of the well-being measures were significantly associated with both of the variables. According to Gerofsky, these results made the biophilia hypothesis stronger because of the fact that both of the NR and Trait emotional intelligence fulfill the human innate need to relate with other life organisms, as the hypothesis suggested (Gerofsky, 2016).

In order to understand the relationship between NR and positive psychology more Capaldi, Dopko & Zelenski (2014) had made a comprehensive meta-analysis study to research the impact of NR on happiness. According to the results of Meta-analysis of 30 different samples, the researchers found that that there is a positive and significant relationship between happiness and nature relatedness. This research proves that the significant relationship between nature relatedness and positive aspects of human well-being does not only come from one single study, instead it can be achieved by various different studies. Besides, in another study of Zelenski and Nisbet (2014) even though further research was recommended, it is very clear that there is a strong connection between happiness and being nature related. The researchers highlighted that nature relatedness remained as a significant and distinctive variable to predict happiness even after controlling the all other variables (Zelenski & Nisbet, 2014).

When it comes to the discourse surrounding the relationship between NR and negative aspects of human psychology like depression or anxiety, it can be seen that there are different results which were achieved by different studies. An important finding of the study of Dean et al. (2018) propounded that people who have high scores from NR scale especially from its dimension about self-identification report a higher level of depression, anxiety and stress. The researchers suggested a further investigation about

these variables as they claimed this contrast may be caused by the intense urbanization, fewer opportunities to have contact with nature and lack of green areas.

On the contrary, a study which took place in Turkey by Sarıçam, Şahin and Soyuçok (2015) indicates a different aspect of the relationship between nature relatedness and depression, anxiety and stress levels. The participants of their study were 242 college students from Kütahya. Turkish versions of NR scale and Depression, Anxiety, Stress Measurement Scale were applied to these students. The researchers had also examined the psychometric properties of Turkish version of Nature Relatedness Scale. According to statistical results, there is a negative relationship between being nature relatedness and having depression and high levels of stress and anxiety. Hence, it can be said that either in the experimental designs or survey designs show that there is an explicit positive effect of nature relatedness on human well-being, its ameliorating effect on depression, anxiety and stress level can change within different societies.

2.5. Time Spent in Nature and Well-Being

Nature or green spaces like trees, landscapes, forests and gardens affect human well-being positively regardless of whether human beings are simply exposed to green views like watching gardens and mountains or simply spending time in nature, physically like walking in a garden (Seitz, Reese, Strack, Frantz, & West, 2014). Although these two ways of experiencing nature are not separate concepts, in order to give a very enhanced and detailed knowledge, these two sections – time spent in nature and being exposed to natural settings- were divided in this thesis.

There are different studies which focus on the amount of time spent in nature and the impact on human well-being. Some studies have specifically focused on child development and disorders within the context of spending time in nature or outdoors. Due to the fact that children of the millennium era spend less time in nature than in previous centuries, a well-known phenomenon, researchers began to wonder about the underlying cause of some mental disorders like ADHD, and they have found that these mental illnesses may be caused by nature deprivation and by not spending adequate time in nature (McCormick, 2017).

Hence, all around the world, the programs which encourage people to spend time in nature have increased. A nature-based program -30X30 Nature Challenge- which was conducted in Canada by the David Suzuki Foundation (DSF) is a very good example of it. Some studies have shown that Canadian people spend less time in outdoors and have a declining contact with nature. That is why, in order to foster the connection with nature, this program was designed. Since 2013, every spring Canadian people have been encouraged to spend time in nature for 30 days during the month of May. This encouragement is also shared within social media and on different websites to reach people. Participants have also received tips through e-mails. Participants in this challenge complete surveys at the beginning and the end of this program. The researchers expected that spending time in nature and an increase in nature connection would positively affect the happiness of the participants. More than 6,000 Canadian people participated in this program and NR scale, Positive and Negative Affect Scale, Vitality Scale and The Environmental Concern Scale were used as instruments. Paired samples t-test was conducted to measure the changes within the participants. According to results, nature contact of participants was increased, participants have started to engage in active and relaxing exercises in nature more. Also, this challenge even increased the socialization skill of the participants and decreased their spent time with technological tools. Participants were more vital and they experienced greater good mood after the program. Overall, it can be said that participants of 30X30 Nature Challenge were connected with nature more and they felt happier after this one month program (Nisbet, 2015). This study shows a clear positive effect that the time spent in nature has on a human well-being.

Although, it is a well-known fact that there is very limited opportunity for urban people to spent time in nature, it is still a big question whether or not people choose or avoid contact with nearby nature in urban places. Researchers Elizabeth Nisbet and John Zelenski tried to find an answer to this question at Carleton University, Canada in 2011. The researchers believed that disconnection from nature which is caused by urbanization causes people to avoid nearby nature because they are unaware of its potential benefits.

In order to test this hypothesis, the researchers made a unique study. They assigned one group of college students to walk in tunnels which connect campus buildings

together for one week and they assigned another group of students to walk on greenery outdoor walking path between campus buildings for one week. Before and after the study, the researchers used same surveys – Positive and Negative Affect Schedule, Inclusion of Nature in Self Scale- and tried to receive the anticipations of students about the benefits of their upcoming walking task. It was found that students who walked outdoors indicated more positive mood than students who walked indoors. All students also fully failed to predict the benefits of getting in contact with nature. The researchers also found that positive affect which was caused by the outdoor walks can also promote nature relatedness. It can be seen that there is a mediating affect between walking location, positive affect and nature relatedness. In order to extend the study, researchers replicated their previous study just by changing walking routes. Results were similar to previous study. The general results of this research proved that walking outdoors created better positive affect than walking indoors. Even though people have an innate need to be attracted by nature, this disconnection from natural world prevent people to fully comprehend the benefits of nature (Nisbet & Zelenski, 2011).

That is why, it can be stated that urbanization causes people to be unaware of the potentials of nature but spending more time in nature makes people closer to nature. Also, due to the fact that spending more time in nature has positive effects on human well-being and spending lesser or no time in nature increases mental disorders, the programs which encourage people to spend time in nature are increasing all around the world.

2.6. Nature Relatedness and Time Spent in Nature

As the previous studies have shown (Nisbet & Zelenski, 2011; Nisbet 2015), research has indicated that while one's nature relatedness increases time spent in nature heightens as well. The reverse is also correct, spending time in nature can increase nature relatedness of people.

In a recent study, this phenomenon was researched. Nature relatedness of preschool and primary school teachers in Malatya which is located in eastern Turkey was researched to identify their abilities to give young children consciousness about nature. The researchers highlighted the importance of gaining insight and knowledge about

nature in early ages of life. They tried to evaluate preschool teachers and pre-service teachers and educational system within this context. A total of 201 preschool and primary school teacher candidates from Inonu University were examined and their nature relatedness levels and some descriptive variables like gender, residential area, department, being a member of environmentalist institutions, frequency of being within nature and frequency of attending outdoor activities were examined. It was found that there is a significantly high and positive relationship between nature relatedness scores and frequency of being within nature and also nature relatedness score and frequency of attending outdoor activities of teacher candidates (Özgün & Özgün, 2019).

2.7. Natural Settings/Green Space and Well-Being

As in the previous section -time spent in nature and well-being- it was mentioned that although time spent in nature and simply watching natural elements like trees are not two different phenomena, in order to provide an enhanced body of research, in this thesis these two sections were separated.

According to World Health Organization, green space is a vitally important for human health because it includes all different parts of the conditions in which people are born, grow, live, work and age (WHO, 2017). Even though, the reasons behind the positive effects of green spaces on human health may not be understood very well, it still results in many benefits in human lives like increase in social abilities, increase in physical activity, decrease in stress and depression, decreased noise, moderation of temperature and decrease in air pollution (Wu et al., 2014).

There are numerous bodies of research which examine the healing effect of nature exposure to human health through self-reports, assessments and physiological measures. Ulrich et al. (1991) conducted a study by using physiological measures to prove the positive effect of nature on stress reduction. The researchers proved that there was a faster recovery for the participants who suffer from stress related disorders when they had been exposed to natural settings. These participants showed skin conductance, lower tension and low blood pressure after they had been exposed to

natural settings. This study can be considered as the vivid and tangible proof of the natural settings on human health.

Another research was conducted by McCormick (2017) about the relationship between green space and mental well-being of children. The researcher examined and reviewed the literature and, after electing the articles for her eligible criteria — English language and published between 2012 and 2017 — she found twelve articles about this subject. The results were remarkable. One of the studies which she reviewed was conducted qualitatively and the researchers found that students learning and playing school areas which included natural habitats, gardens and wooded playgrounds were able to improve focus, gain confidence, form healthy social relationships and reduce stress (Chawla, Keena, Pevec, & Stanley, 2014). The other researches were quantitative studies using variety of tests, surveys and forms to measure the relationship between these two variables. For example, In Akpinar's (2016) study, 223 high school students whose age range between 12-20 years were examined through "attention restoration theory" components, their school green level and health indicators. The researcher found that greenness of high schools contributed the students' perceived restoration and younger students stated that they have better life quality and health with more green spaces at their schools (Akpinar, 2016). Overall with her examinations, McCormick has concluded that access to green space is a very significant contributor to children's and youth's mental well-being, cognitive development and health. It reduces stress, promotes focus and attention, recovers the symptoms of ADHD and it is even correlated with better exam scores. She stated both the amount of greenness near the school or home are beneficial for children and she strongly suggested that children who live in high-risk neighborhoods like ghettos must be given more opportunities to contact and to relate with nature (McCormick, 2017).

Natural settings matter not just for educational advances or psychological well-being but it also matters for physical health. Even though, natural settings of hospitals had been important for hundreds of years –like the hospital at the social complex of Bayezid II which was mentioned in the previous section-, its significance has decreased especially from the mid-twentieth century as the authorities care more about medical equipment than about patient's well-being. The comfort of hospitalized patients and their settings started to be seen as unimportant (Sternberg, 2009).

Nonetheless, massive renovations in hospitals, primary care clinics and rehabilitation centers have been started after the recognition of the healing power of nature on human health. In order to benefit from nature, the United Kingdom and the United States of America have spent billions of dollars to make these renovations on health-related buildings because authorities in those countries have realized that the healing effect of nature has made recovery cost decrease. For instance, burned patients who practice regular walks in different gardens and experience natural settings heal more quickly (Mitten, 2009).

A famous study was conducted by Ulrich (1984) about the importance of natural settings of physically ill patients in the late 1970's. Ulrich searched and examined the files of the patients who had experienced gall bladder surgery in the hospitals of Pennsylvania, USA between the years of 1972 and 1981. He examined 46 patients which included 16 men and 30 women. Half of these patients' beds were near a brick wall and half of these patients had beds near windows which had views of trees and nature. During the recovery process, some patients had the chance to see nature while others could not. Ulrich had examined indicators of health of each patient which included the vital signs, duration of hospital stays and types of dosages and medications. He tried to exclude and control for variables like sex, age, the year of their treatment, whether she or he was a smoker or not, even the texture of room floor that he could think might impact their recovery. The results were quite remarkable. The patients who had a view of nature recovered sooner and left the hospital earlier. Besides, these patients needed lesser doses of pain medications. This study is a strong proof of the vital impact of natural settings for human health (Ulrich, 1984).

Following Ulrich' study, researchers tried to understand the effect of having a natural view on human well-being in different environments. Moore (1981) conducted a study in prisons and figured out that the prisoners who lived in the cells which had open natural view visited the informatory less than prisoners who live in the cells without natural view. Heerwagen (as cited in Benfield et al., 2015) found that natural murals decreased anxious behaviors and high blood pressure of the dental patients. Also, along with the natural view from windows, the presence of natural light was found helpful for the recovery of those who had faced with surgery. Chang and Chen (2005) researched everyday life settings of people. They found that living environments and

living surroundings can affect psychological health like having anxiety and tension. They found that nature views of windows and indoor vegetation has been related to low anxious attitudes. Unfortunately, schools and educational buildings have been designed as windowless because of the profits like reducing outside noise, decreasing cooling and heating costs and increasing the space within schools. However, studies have shown that the positive impact of having natural views is far more important than these profits (Benfield, Rainbolt, Bell, & Donovan, 2015). Many studies have focused on natural views and natural lights across different schools and it was found that higher scores in mathematics and readings were achieved by the students whose classrooms have larger windows and have more access to day light (Heschong Mahone Group, 2003).

The relationship between nature and human well-being is not a subject which has been researched only by the authorities from sociology, psychology, counseling or other health professions. It has also received attention from the fields like agriculture, forestry, public health and landscaping. The research of Wu (2014) and his colleagues from the department of forestry and public health offer a unique example about this interest. Wu and et al. (2014) wonder about the possibility of the implementation of these benefits into a supportive environment for children's academic success. Their study is quite important because it is the first study which investigated the relationship between green environment and academic performance by involving remote sensing techniques. The researchers investigate 3rd graders from 905 public schools in Massachusetts, USA. They used the 3rd grader's standardized test scores of English and Mathematics lessons. The green areas or greenness of school surroundings was measured by satellite images in different seasons in a year -October, March and July. Strikingly, the results made this huge effort meaningful. After analyzing the data, the researchers had found that students who get education in a higher green surrounded schools have better academic achievement both in Math and English lessons (Wu et al., 2014).

All of these studies indicate that being exposed to natural elements, natural light and green spaces are not just beneficial for the physical health of people, but it is also helpful to increase positive outcomes of mental health, psychological functions and academic success, as well.

2.7.1. Natural Settings/Green Space at College Campuses and Its Effects on the Well-Being of the College Students

College students have been experiencing stress and pressure at high levels because of the intense academic competition, efforts for achieving academic success and future career goals. Research has shown that this pressure and stress can negatively affect their mental health. For instance, Li and Lin (2003) found that college stress causes harmful impacts on the psychological well-being of Chinese college students. According to Reuters Health (2019) the amount of stress, anxiety, pressure and depression has increased rapidly in U.S. college students and these mental health problems can even lead to self-injury and suicidal beliefs among students. That is why, it is very important to create healthy and sustainable university environments for college students who face stress during a critical stage of their development.

There are numerous studies which indicate the importance of having green space on campuses for college students' well-being. McFarland, Waliczek, and Zajicek (2008) conducted a study about this theme and they had found that there is a positive impact of having green campuses on the quality of life of the undergraduate students. Another study which was conducted by Roger Ulrich (1979) indicates the effect of nature on stress reduction of university students. The researcher investigated the reactions of the students who faced with a mild stress due to the final exams by contrasting slideshows of urban scenes or natural scenes to the students. He had found that positive feelings were increased and negative feelings were decreased in the students who were exposed to natural scenes compared to students who were faced with urban scenes. This study indicates that even just the exposure of natural settings can contribute the psychological restoration of the college students (Ulrich, 1979).

Similar to Ulrich's famous study (1984) which was mentioned in the previous section, an enhanced study about natural view's effect on college students was held by Benfield, Rainbolt, Bell and Donovan (2015). The researchers tried to examine differences between two types of classroom settings – one with natural view and other with concrete wall view- through college students who took the same writing course but in different sections. The researcher examined 567 undergraduate students via 38 course sections. 29 of the sections were held in the classrooms which had natural

window views of blossoming trees while 9 of the sections were held in the classrooms which had concrete wall view. The researchers used a specific questionnaire and midterm and final grades as measurements. They found that positive classroom outcomes were achieved in the classroom with natural view. In these classrooms, students positively rated the resources, materials and curriculum of the classroom compared to those within the classroom without natural view. In addition, higher final grades were achieved in the classrooms with natural view than the classroom without natural view (Benfield et al., 2015). This study is consistent with Ulrich' studies (1979, 1984) indicates that along with the images of nature, just plain views of nature which were captured inside of the educational buildings help to enhance college student's success and well-being.

Furthermore, exposure to green spaces affects the students' mental ability as well. Tennessen and Cimprich (1995) examined the attention levels of college students. They did research using 72 undergraduate students by using different attentional instruments. The researchers had found that students who had a view of natural settings like gardens and trees from their residential places had better results on attentional tasks than students who did not have natural view.

Hence, there has been lots of attempts by the researchers and university authorities about creating campuses which have enough green spaces for the students. In the last couple of years, universities across the world have tried to make their campuses greener. For example, Malaysia has tried to establish campus greenways which enable walkers, joggers and cyclists a pleasant environment (Foo, 2013). In addition, especially in the last decades, the system of university rankings has been popular. Although academic success, reputation and research have been ranked across different universities there are also a few attempts to rank environmental quality of the universities. UI Green Metric World University Ranking had been established in Indonesia to share environmental sustainability and to promote green campuses of the universities around the world.

In order to study this ranking, Tiyarattanachai and Hollmann (2016) have conducted a significance study to investigate and to compare the perceptions and the quality of lives of the members in a green campus university and in a non-green campus

university in 2016. They picked Mahidol University which is a member of UI Green Metric World University Ranking as green campus university and they also picked King Mongkut's Institute of Technology Ladkrabang which is not a member of UI Green Metric World University Ranking as a non-green campus university. From these two universities 524 participants were selected, and a demographic form and a perceived quality of life scale, which was specifically designed for this study, were used. The results indicated that perceived quality of life did not differ according to demographic factors like age, gender and study level. As expected, participants from green campus university have higher scores on the perceived quality of life than participants who are a member of non-green campus university (Tiyarattanachai & Hollmann, 2016).

In addition, green campus and the campus environment are significant for the authorities of the universities. Because it impacts college students' choice of a higher educational institution It was found that university students' selection of a higher educational institution depends merely on the campus environment and perception. Furthermore, it was also found that loyalty and the creation of the memories among college students can be achieved by lively and attractive campus environment (Speake, Edmondson, & Nawaz, 2013). It can be said that campus environment is vital not just for the psychological components of the college students but also the image of the universities itself.

When it comes to discussing the preferences of university students about the settings which they choose to be within, different studies were held across countries. A study from United States indicated that students' preferences supported the existed body of research. In this study, (as cited in Lau & Yang, 2009) the researchers Francis and Marcus found that 75% percent of the university students preferred natural settings like being near water features or wooded urban parks when they were faced with high stress and depression. Abu-Ghazzeh (1999) investigated another research about preferred outdoor settings of university students in Jordan. The researcher carried out a great deal of interviews with students along with the university staff about the preferred types of settings, the affective quality of these settings and behaviors of university members about outdoor settings at the campus. He found that members of

the university preferred to be in outdoor settings between the buildings of the university which include quiet landscapes, trees, and meadows.

Another research about the preferred green campus space was conducted in United Kingdom at Liverpool Hope University by the researchers Speake, Edmondson and Nawaz (2013). The researchers tried to find out the perception about the campus green space of college students. They tried to examine students' awareness and use of campus green spaces, quantity and quality of these spaces and their thoughts about improving these spaces. They used a questionnaire which provide both qualitative and quantitative data. In total 205 college students participated in this research. They found that undergraduate students were more aware of campus green spaces than the postgraduate students who took place in this study. They also found that these green areas were used for social purposes like hanging out with friends or meeting points. In this study, the researchers also noticed that the use of green spaces in campus was varied between demographic values. Female students used campus green spaces more than male students. Undergraduate students used these spaces for social functions more than postgraduate students. Another finding was that gender was an important determinant for sports activities in campus green spaces. Although female students used green spaces for other reasons like lunch, relaxation and study, male students used these green spaces more for sports activities. They also reached the conclusion that even though awareness about green spaces was very high among these students, only half of the participants actually used these spaces. In addition, they found out that the location and the closeness of the green spaces within campus are a very vital determinants of green space use within campus. If the location of these green spaces is nearer the educational buildings, use of green spaces was increased. So as to clarify, it was highlighted that proximity of the green spaces is important along with the size of the green spaces on campus (Speake, Edmondson, & Nawaz, 2013).

Similar to the study of Speake et al. (2013) another interesting study was utilized by Seitz, Reese, Strack, Frantz and West (2014) in the United States about identifying and improving green spaces on university campus. The researchers emphasized the important effects of the green spaces on campuses to reduce stress. They used photovoice study which was described as "a qualitative methodology used to conduct community-based participatory research" (Seitz et al., 2014, p.100). 45 undergraduate

students participated in this study and they were asked to take photos considering these two questions: (1) What green spaces do you visit on campus to reduce your stress? (2) How can these green spaces in campus improve for decreasing stress? Student's expressions and photos were analyzed. The researchers had found that students took pleasure and relief from both pure natural surroundings like flowers and trees and man-made structures like fountains and benches. The students also highlighted that there must be some renovations about trash cans and some spaces lacking greenery. After the study, the researchers created a photo exhibit from these photographs and with this exhibit students' voices could be heard by the university authorities and other students who did not participate in the study had a chance to know the findings of the study (Seitz et al., 2014).

One can assume that sometimes it is impossible to create a green campus university especially for the districts which are urbanized and densely populated. However, researchers from Hong Kong which counts as one of the most populated countries in the world conducted a study about nature's healing effect on university students despite the fact that they had a really limited green space at Hong Kong University and in Hong Kong in general. The researchers applied a two-paged survey about green space perception and usage, preferred resting points and natural view to the university students and to the university staff in the architecture department. In total 33 responses were achieved by the university members. They found that university members visit green spaces within the campus often for relaxation from work or study. However, they also found that these places were not preferred for social activities. The researchers noted that this finding was caused by the fact that there is a very limited capacity of these green places. That is why, it is not applicable for social gatherings. They had also found that natural view is considered as important for the respondents. The respondents chose to see a natural view from inside of the building without going outdoor. This finding was considered as significant because as they claimed, the body of research has clearly shown that highly visual accessible green space can improve the psychological effects of the students and it can eliminate the effects of the mental disorders like stress and attention problems (Lau & Yang, 2009).

All of these studies explicitly prove that being exposed to natural elements like trees, meadows and gardens has an enormous positive impact on student's mental well-

being. Natural views from the inside of the campus buildings matter for students' academic success. Natural images are also efficient for eliminating stress related disturbances. Green areas in the campuses are preferred not just by the college students but also by the college staff, as well. These green areas serve lots of functions for the quality of lives of students like socializing and doing some sports activities.

2.8. Socioeconomic Status and Well-Being

Socioeconomic status or SES can be defined as a combination of different factors such as parental education, occupation, income and opportunities used collectively or individually (Wu et al., 2014).

Plenty of research have shown that people of higher socioeconomic status (SES) tend to have better physical, mental and cognitive health. It is a very important determinant for well-being of both men and women and across different societies and ethnic groups (Luo and Waite, 2005). That's why, along with the nature relatedness, exposure to natural settings and time spent in nature which were seen as important contributors for well-being in this thesis study, it is also very important to consider SES of participants in the context of well-being.

In a very enhanced study of Luo and Waite (2005) the positive relationship between SES and well-being was demonstrated. In this study, it was found that childhood SES is related with adult SES. People who grew up in disadvantaged conditions had poorer health or low well-being outcomes in their adult life compared to people who grew up in advantaged families. Childhood SES was also very important for household income and academic success in later life. The study of Luo and Waite (2005) also showed that negative effect of having a low SES background can be ameliorated in adulthood by achieving a higher position. The striking result of this study was that college education is more important for women's health whereas higher income is more important for men's health.

Another research about SES and well-being has been conducted in Turkey by Eryılmaz in 2010. The researcher has studied the difference between Turkish adolescents' subjective well-being levels in accordance with their gender, age and SES levels of

their parents. Eryılmaz (2010) stated that subjective well-being is very important to comprehend because it tells the potential of the youth in the society. The researcher investigated 432 adolescents whose age are in between 15-17 from different high schools. According to results, there is no gender differences on subjective well-being levels like previous literature proposed. However, there is a significant difference between subjective well-being level of students who have low SES and high SES. Results also differ for different age groups. The researcher concluded that SES levels of students are significant for their subjective well-being unlike the previous literature findings suggested that there is not a significant relationship between SES and subjective well-being. The researcher claimed that previous studies were held in developed countries where SES is not vital as in the developing countries. These results have revealed itself because Turkey is not a developed country yet, it is still developing. Age is also important for subjective well-being because older adolescents are getting closer to national university entrance exam which is very stressful and it affects subjective well-being, negatively in this country.

Furthermore, in the meta-analysis study of Pinquart and Sörensen (2000) the effects of SES on human well-being can clearly be seen. The researchers began to wonder about the relationship between subjective well-being and SES, social network and competence in elderly people. They have reviewed 286 empirical studies about these subjects and tried to analyze findings. The researchers found that social network, competence and SES was positively correlated with subjective well-being. SES was an important contributor for life satisfaction especially for elderly men than elderly women. Besides, educational status and having a higher income contribute elderly men's subjective well-being or their happiness than elderly women. On the other hand, social network was more important contributor for women's subjective well-being than men. In addition, they have found that quality and quantity of social network was highly correlated with the subjective well-being of the older respondents. The researchers highlighted the phenomena which implies that the significance of the network or social contact advances with age. The other finding of this study is that respondents gave value on the quality of social contact than quantity of social contacts. The other interesting finding of this study is that subjective well-being of the respondents was positively correlated with having contact with friends whereas quality of life increases when having contact with adult children. In brief, this meta-analysis

proved that people who have higher SES have higher competence, better social networks, higher self-esteem, happiness and greater satisfaction of life (Pinquart & Sörensen, 2000).

All of these studies indicate that SES is an important contributor to human well-being. It affects the quality of life in childhood, adolescence and adulthood. It is also a very important factor for young people in Turkey where economic advantages are low. Hence, along with the effect of nature, SES factor should also be considered to examine well-being of the college students in Turkey.

2.9. Nature Based Education or Environmental Education

In Turkey, there has not been enough researches or studies about nature education and green consciousness. Instead, there are plenty of research about environmental studies, environmental concerns, protection of environment etc. Environmental education has been taken into consideration with formal education. That is why, the idea of "Environmental concern or consciousness can only be increased in school education" is commonly held (Özdemir, 2003; Çukur & Özgüner, 2008).

Çukur and Özgüner (2008) argue the importance of gaining nature consciousness in early ages of life. They defend that humans who have a consciousness or a sensitivity about nature see themselves as a part of nature, respect the other living organisms and protect nature without the need of teachings of environmental morals. Implications of nature based environmental education has been increased since the early 1990's and they are very efficient about obtaining values and information about nature compared to formal environmental education (Özdemir, 2010). Brody and Hall (2002) observed that students who attend environmental education at outdoor (like a park trip) had gained lots of information about nature and started to have an emotional attachment to living and nonliving organisms within nature.

Özdemir (2010) conducted an empirical research about nature based environmental education which focused on experience of nature on the perceptions and attitudes of primary school students towards their environment. The research was conducted an experimental design with the 20 students who were studying in an elementary school

in Muğla-Akyaka town in the 2006/2007 academic year. The data was collected through the "environmental perception scale" and "environmental behavior observation form" which was developed by the researcher, as well as by analyzing "stories" which were written by the participants. As a result of the research, it was found that the students' awareness about environmental values and their concerns and reactions about the environmental problems with which they were faced increased. Also, students' responsible behavior towards the environment improved. This study has shown that along with the several benefits of nature on human health, the consciousness about Mother Nature can only be increased with nature-based education and activities for children and young ones.

2.10. The Turkish-Islamic Perspective About Nature

Even though, as human beings, our innate need to connect to nature has some universal characteristics, it can be seen that there are some differences about our relationship with nature through cultures, religions and geographies. Because of the fact that this thesis study was held in Turkey which has predominantly Islamic population and all of the participants were Turkish oriented, it is very important to comprehend Turkish-Islamic perspective about nature.

Throughout the history, Turkish people had believed in different religions like Tengrism, Manicheism, Animism, Buddhism, and Islam. Before adopting and practicing the religion of Islam, Turks had widely believed in Tengrism which implies that there is an almighty creator whose place is in the skies. According to this belief, sacredness is attributed to natural elements like mountains, trees, rocks and rivers. People who practiced this religion were seeking help from *Tengri*, the sky-creator as well as other natural sacred organisms. For instance, people who practiced Tengrism considered the fire as a sacred element because it helped them to get warm in the harsh and long winters in the steppes of the middle Asia which was the homeland of Turkish nomadic people before today's homeland in Anatolia (Eroğlu & Kılıç, 2010). Turkish people were also affected by the Shamanist culture before Islamic era. Shamans believed that the earth was full of souls and the mountains, the rivers and the lakes were living creatures which were able to talk, hear and even get married. That is why,

respecting nature was considered very important for Turkish people who had predominantly believed in Tengrism and were culturally affected by Shamanism (Çınar & Kırca, 2010).

After adopting the religion of Islam and transiting into settled life from nomadic life, nature-human relationship in Turks had started to acquire different dimensions. Every aspects of nature were started to be respected and they were considered as the reflections of Almighty God on the earth (Çınar & Kırca, 2010). Gardens can be a very good example about this transition. Nomadic Turkish people from middle Asia did not limit nature in limited places like gardens. After they got settled they had started to create big gardens and parks. The historical Chinese, Indian and Persian records indicates that there were enormous and beautiful gardens at Samarkand city in middle Asia (Tazebay & Akpınar, 2010). In addition, it can be said that Turk's real relation with gardens started when they created two big civilizations; Seljuk Empire and Ottoman Empire. In these two empires, Turkish people had reflected their new viewpoint of life and nature through gardens (Demiröz, 2002).

According to Islamic belief, this life on earth is temporary and it is full of difficulties and distress. Only for a true believer of *Allah*, the God can endure the difficulties of this life and he will be rewarded with the heaven in the hereafter. *Jannah*, the heaven was depicted in the *Quran*, the holy book of Islam in a very detailed way. It was depicted as a magnificent garden which has various beautiful fruits, flowers and trees and the rivers flow beneath it. That is why, Muslim people had made a spiritual connection between the god and the gardens. And throughout the history, in many civilizations including Seljuk and Ottoman Empire, Turkish Muslim folks had tried to create a heavenly garden on earth (Demiröz, 2002). This type of spiritual relationship with nature was also observed by some western voyagers who traveled through the land of Ottoman empire. The French botanist Joseph Piton De Tournefort narrated his observations about Turkish people through his letters. In one of his letters, he stated that "The most pious Turks were the ones who water the plants and loosen the soil. By taking care of the plants and vegetation, they think that they do good acts which the God was pleased with." (Çınar & Kırca, 2010).

Maybe it was because of their nomadic hereditary, Turkish people had always cared about outdoor living settings like gardens. Whether they were wealthy or poor they always had gardens besides their houses. Historical records told us that Turkish people preferred to call palaces as gardens. When they wanted to settle down somewhere, they had always considered the beauty of the view, accessibility of the water resources and the opportunities of hunting. After these considerations, cities and buildings started to be constructed (Demiröz, 2002).

The unique styles of Turkish gardens had also represented how Turkish people choose to connect to nature. Even though Turkish gardens were influenced by the gardens of Persians, Byzantium's and Indians, in time, they had created their own unique style of gardens. Turkish people had designed gardens in a way that they can connect and feel the nature unlike western societies who designed gardens as a beautiful but structured scene to be watched (Demiröz, 2002). Turkish people had also cared about the functionality and usefulness of the gardens. That is why, the fruit trees were always part of their gardens. Tazebay and Akpınar (2010) explained that Turkish gardens always had simplicity and modesty as their basic characteristics. The least intervention to nature was preferred in these gardens and respect to nature as its own form was protected. That is why, ground of gardens was kept in a natural form like plain soil or grass and pruning trees was avoided. Water had always been as the main element of these gardens. Hence, a pool, a river or a fountain was always included (Nemlioğlu, 2010). Also, internal courtyards were kept close to the houses as Turks had seen the gardens not the outside of their living settings but as one of the parts of their lives.

Turkish gardens served an important social role in Turkish culture, as well. Historical records showed that especially in the Ottoman Empire weddings and ceremonies were held in the gardens and in these ceremonies various beautiful flowers were used. In today's Turkish society, it can also be seen that countryside weddings which are held in gardens and in rural areas are increasingly popular. Maybe it is because of the fact that Turkish people are instinctively chasing their ancestors' footsteps. Although flowers and trees were used for their beauty and usefulness in these gardens, they also had special symbolic meanings for Turkish people. For instance, plane tree was considered as the resource of the life and for this reason these trees were planted in the gardens of mosques, palaces and in the land of the cities which was recently conquered

in the Ottoman Empire. Because of their shape and long lasting lives, cypress trees symbolize the singularity of the God and they were especially planted in the graveyards (Çınar & Kırca, 2010). Red roses symbolize the love of *Muhammad*, the prophet of Islam, hence religious people had tried to plant red roses in their gardens to remember their love for the prophet. It might be a striking example about the connection between Turkish people and nature to know that a very important political and social era in the Turkish history was called by a flower's name; tulip. In tulip era (1718-1730), there were enormous tulip gardens in all around the capital city Istanbul and these flowers had symbolized peace, wealth and singularity of God (Nemlioğlu & Mazak, 2009). In fact, origins of tulips were Anatolian-oriented. Turkish people especially after the 12th century took enormous care about tulip flowers and they had used its symbolic meanings in their art, poetry and literature. Austrian ambassador Busbecq mentioned his observations about tulip gardens at the capital city Istanbul through his letters. In one of his letters which were written in 1559, he wrote that "The tulips have barely a scent but their beauty and the rich variety of their colors leave the spectator amazed". Busbecq was amazed the beauty of this colorful flower and tulip gardens. While he was returning to Augsburg, he took so many samples of this flower and with the efforts of this ambassador, European societies had met with tulip (Ünver, 1971).

The sincere connection of nature of Turkish people can also be detected in different branches of art. Especially in the Ottoman Empire, lots of nature related figures like leaves, red poppies, narcissus, cloves, tulips and roses could be seen in the arts of stonemasonry, ceramics, miniature, carpet weaving, wood engraving and so on. The art of *tezhip,* the illuminated manuscript for the holy book of Quran also includes many nature related figures. In the literature, there were special poems just for specific types of flowers. The poets had revealed their love of nature through these poetries and had used their metaphoric meanings to reflect their emotions (Çınar & Kırca, 2010). Today, the remains of this rooted relationship with nature can easily be seen in historical buildings, mosques and in the museums.

In addition, this deep and rooted relationship with nature can be seen in some of Turkish sayings, phrases and proverbs like "There is no flood in the land of trees", "River digs its own hole" or "A drop of water is equal as a gold grain" (Gülüm, 2009).

In these proverbs, the actual meaning of natural elements was used as well as their symbolic meanings which serve as didactic guides about life. Most of the Turkish proverbs indicates the importance of nature on human lives and they also include environmentalist figures such as “If you cut a green wood, then you cut a head” or “Drop by drop a lake come out”. (Bozyurt & Koca, 2011). These proverbs state the importance of protection of woods and water saving.

However, the situation of this relationship in today’s Turkey, is still an important issue to question. Although, Turkish people had a deep connection to nature and this connection can be seen in the history through Turkish gardens, today the exact opposite situation is dominant in the lives of Turkish people. Unfortunately, there is a very limited space for nature in the education, social life, health and architecture today. This alienation from nature may be started in the 18th century when the westernization movements increased (Çınar & Kırca, 2010; Tazebay & Akpınar, 2010). These movements which affected the systems of military, education, and social regulations also changed the Turkish society’s perceptions about nature. Western authorities were brought into Ottoman palaces and beside massive renovations, they redesigned Turkish palace gardens within their own worldview which portrays the nature as a destructive thing that needs to be controlled. Western ideology also implies that nature can only become beautiful when it gets proper interventions and is shaped (El-Karadavi, 2011). This ideology changed the construction and use of gardens in palaces and from there it spread into the society. Turkish people let their relationship with nature go into the hands of the authorities (Çınar &Kırca). With the cultural transition which was began with the westernization movements in 18th century, Turkish people became alienated from nature and from their own cultural identity.

On the other hand, Islamic teachings deeply care about human-nature relationship. Quran, the holy book of Islam includes lots of verses about nature. Also, most of names of the sections within Quran are related with nature like the sections of bee, horse, spider, lightning, wind, sun, star, elephant etc. Quran does not attribute sacredness to natural elements like in many other religions. According to Islam, natural elements like mountains, rivers, trees are not sacred to be worshipped. On the contrary, Islam also did not portray nature as an enemy which destroy the human well-being like in some western ideologies. Islam states that nature and all universe worship and praise

the God. Universe, earth and nature were given to human-beings as gifts to serve. They were all created to give benefit to human beings (45:13). That is why, the duty of human-beings was described as *Khalifa*, protector, organizer and manager of all living beings. With this duty, Islam guides Muslim people's moral perspectives about nature. Quran says that (6:38) all groups of living creatures are societies like human folks. Hence, Muslim people should consider the rights of other creatures like they are an *ummah*, a society (Karadavi, 2011). Besides the verses of Quran, the sayings and life style of Prophet Muhammad shape the lives of Muslim people. One of the famous sayings of prophet Muhammad claims the importance of taking care about one's own environment and greenness in this statement: "If the hour (the day of Resurrection) is about to be established and one of you was holding a palm shoot, let him take advantage of even one second before the hour is established to plant it." He told the importance of planting trees in another statement: "If a Muslim plants a tree or sows seeds, and a bird, or a person or an animal eats from it, it is regarded as a charitable gift (sadaqah) for him." (Fathi, 2019). Both verses of Quran and sayings of the prophet focus on nature intensely and by clarifying that human beings are responsible for taking care of nature and living creatures, these teachings indicate nature's value on human well-being.

Neither Islamic belief nor historical Turkish culture did not miss to contact with nature. Turkish gardens were explicit examples of this ideology. The Turkish universities which represent the higher intellectualism of this society should embrace the cultural and spiritual identity of their own people and must include nature related opportunities and physical spaces like green areas or gardens. With this way, not only well-being of college students increases but also cultural identity can be preserved.

CHAPTER III

METHOD

In this chapter, conceptual framework of the study, design and participants of the study, the instrumentation, collecting and analyzing data as well as limitations of the study are covered respectively.

3.1. Conceptual Framework of the Study

When it comes to discussing the 'philosophical orientation', the 'worldview' of this research, it is clear that this research has a postpositivist perspective. Postpositivism revealed itself after the 1950's by criticizing and changing some main elements of positivism. Positivists see the world as an objective and testable environment; they are not flexible in terms of interpreting the questions, the data and the observations. Postpositivism can be described as a less strict form of positivism. The main distinction between the two is while positivists focus on theory verification, postpositivists focus on theory falsification (Garner, Kawulich & Wagner, 2012).

In order to understand the main subject of this research, the researcher had tried to test and reject the objective hypothesis which is a basic characteristic of postpositivist worldview. In addition, in this research, the data was collected through instruments which were completed by the participants. The data has shown itself as a report so the main interpretation was based on objective interpretations of the numerical information. Besides, the information did not change the starting elements of this study, as in qualitative studies. When all of these characteristics are summed up, this study shows postpositivist worldview.

3.2. Design of the Study

This study is a non-experimental quantitative study. It aims to find any significant relationship between nature relatedness, time spent in nature, SES, green campus space and mental well-being of university students. Correlational survey design was employed to collect the data. Survey package which includes informed consent form, sociodemographic information form, use of green campus space form, the Turkish version of NR scale and the Turkish version of Warwick Edinburgh Mental Well-being Scale was specifically used. These instruments were given to some of the participants in hand and they had completed them in presence of the researcher. Also, the instruments were given to some of the participants through online. Esurveycreator.com was specifically used for online participations. Data was collected through socio-demographic form, use of green campus space form and by means of two questionnaires -NR Scale and WEMWB Scale- both of them contain 35 items in total. The majority of these items were Likert scale items based on a scale from "strongly disagree" to "strongly agree." Other questions were asked for factual information, such as gender, age, residential town, educational degree, working situation, marital status, SES and time spent in nature in the sociodemographic form. Details about the characteristics about campus green space were included in use of green campus space form. The data which was analyzed in this study was obtained from the questionnaires.

Correlational survey design was chosen for this research because it is very feasible in economical way and it gives a rapid turnaround in data collection. Survey design is also advantageous to attribute the features of a large population from a small group of individuals (Creswell, 2014). In addition, in this type of design, it was tried to analyze the relationship between variables, without interfering (Büyüköztürk, 2018). Nature of this survey design can be defined as cross-sectional. The determined timeline for administering this study was two months. Within the months of January and March of 2020, the instruments were distributed, the data was collected and the results were analyzed.

3.3. Participants of the Study

Participants of this study were the people who were getting higher education on 2019-2020 academic year from different cities in Turkey. In this thesis study, way of choosing a sample which presents the main population was not preferred. Convenience sampling method was used to achieve participants because of time saving, feasibility and economic reasons. Some of the participants were from Ibn Haldun University in which the researcher studies. The instruments were applied some of the students of this university in hand. And some of the participants were from other universities in different cities across Turkey and online survey techniques were used to reach out to them. The researcher tried to reach the participants through students' mail lists and other online groups. Some of the participants helped the researcher to find other participants from their own social groups. Hence, it can be said that in this study, snowball sampling method was used as well. As it is recommended, the required sample size should be larger than the total number of items in the questionnaires, the aim was to reach at least 350 college students. Total 442 students were reached within two months. Hence, it can be said that the number of the participants is large enough to be able to analyze the data. 12 participants with large number of missing and 26 outliers were detected in data and they were excluded from the study. Hence, data analysis continued with 404 participants. Characteristics of these 404 participants will be elaborated in the following paragraph.

The sample of the present study consisted of 103 (25.5%) male students and 301 (75.5%) female students who had received different degrees of education. 31 (7.7%) participants were preparation class students, 307 (76.0%) participants were undergraduate students, 51 (12.6%) participants were graduate students and 15 (3.7%) participants were doctorate students. The mean age of the participants was 22.03 (*SD* =3.67) within the range of 18 to 45. 366 (90.6%) of the participants were single whereas 38 (9.4%) participants were married. 103 (25.5%) participants were working in a part time or full-time job whereas 301 (75.5%) participants were not employed. Participants were from 25 different cities in Turkey. However, majority of the participants, 322 (79.7%) were educated at the city of Istanbul. The mean SES (monthly income for desired activities) of the participants was 413.76 (*SD* =274.05) Turkish lira within a range of 10 to 1500. 261 (64.6%) participants had green space in

their campus whereas 143 (35.4%) participants did not have any green space in their campuses. The mean time spent in nature of the participants was 4.33 (*SD* =3.77) hours on a weekly basis within the range of 0 to 19 hours.

3.4. Instrumentation

In the present study, a survey package including informed consent form, sociodemographic form, use of green campus space form, Turkish version of Nature Relatedness Scale (NR-21) and Turkish version of Warwick Edinburgh Mental Well Being Scale (WEMWBS) were administered to the participants.

3.4.1. Informed Consent Form

Before starting collecting the data through instruments, it is very important to present an informative consent form to the participants. With this form, participants are able to learn the main aim of the current study, volunteering and confidentiality principles at the beginning of the research. In the consent form of this study; the aim of the study, the time that will take to complete the surveys, the volunteering and confidentiality principles, anonymity of the instrument and the contact information of the researcher were presented. If they approve the given information, they would be able to complete the form, as well.

3.4.2. Sociodemographic Form

Apart from informed consent form, the sociodemographic information which is related to the research was asked in this study. Questions about age, gender, marital status, the degree of education, the residential town, employment, SES, time spent in nature and lastly the existence of green space in campus were expected to be completed by the participants. The SES was asked through this statement: "Apart from your basic living expenses like the payment for sheltering, bills and food what amount of money could you spend on your desired activities like traveling, going to cinema, online shopping etc. on a monthly basis?" This open-ended question would give the SES of the participants as a continuous variable which is very important for statistical data. Time spent in nature was asked through this statement: "Apart from your work and educational duties, how much time do you spend in nature/outdoor settings by doing

outdoor activities like walking, cycling, camping, nature photographing, observing clouds and sky, taking care of street animals etc. on a weekly basis?" This open-ended question would give the time spent in nature or outdoor on a weekly basis and as a continuous variable again. Existence of green space/natural settings at campuses was simply asked through a yes or no question: "Does your campus have green spaces or natural settings like meadows, trees, forest, square, fountains, lake, seaside, river, mountain view etc.?" If the participants chose to answer 'yes', only then, they were directed to fill the use of green campus space form. If they chose to say no, they were directed to complete the NR scale and WEMWB scale, immediately.

3.4.3. Use of Green Campus Space Form

In this thesis study, use of green campus space form was used along with the other forms and scales in order to elaborate and investigate the students' viewpoints and usage pattern of the green spaces in campuses. To achieve the enhanced information of the students about these green spaces, a couple of questions were asked. These questions within this form were created by the researcher of this study by taking into consideration previous studies about this subject (Lau & Yang, 2009; Speake et al., 2013). In order to increase the reliability and validity of the questions, first of all these questions were asked to 4 students, individually. According to feedbacks of these students, the questions were revised and after this process, the data collection begun. In this form, four main questions were asked to the students. The first question was about the time spent in green spaces in campuses, numerically and in an open-ended way. The second question was about the diversity of activities which were done in these green spaces like "I use green space to eat food or meet with the friends." and so on. The third question was about the obstacles which were faced within the usage of the green spaces like "I could not be able to use green spaces because it is very limited/small or I am very busy and have no time to visit these places." and so on. There was an open-ended section in both of the second and the third question to give freedom to the participants when they want to clarify a different situation along with the specified situations. The fourth question in this form tried to achieve the college students' desire of the connecting to these green spaces by questioning the students when they were inside of the campus buildings whether they still want to observe and watch the natural elements and green spaces from inside. With these questions, the aim

was to achieve the usage pattern of the green spaces and the viewpoint of the students who had green spaces in their campuses.

3.4.4. Nature Relatedness (NR-21) Scale

In order to comprehend the complicated relationship between human and nature, it is important to examine different dimensions of this unique relationship. NR scale serves in that way and it captures all three facets of human-nature relationship which are cognitions, affects and experiences with nature (Nisbet, 2011).

NR scale has included 21 items and 3 dimensions. These dimensions are; NR- self, NR-perspective and NR-experience. NR-experience dimension represents physical familiarity to natural living and it has 6 items on the scale. NR-self dimension represents emotions and ideas which reflect the individual connections with nature and it has 8 items on the scale. The last dimension NR-Perspective represent the impact of individual human behaviors on all living organisms and it has 7 items on the scale. NR scale is a 5-point Likert scale and ranging from 1 (strongly disagree) to 5 (strongly agree). Its score can range from 21 to 125. Higher scores show a higher relatedness with nature. NR scale has also 8 reverse scored items. (Çakır, Karaarslan, Şahin, & Ertepınar, 2015). These reverse scored items within each subdimensions were presented in the table 3.1. below.

Table 3.2. The subdimensions and reverse scored items of Nature Relatedness scale

Dimension	Number of Items	Items	Number of Reverse Items	Reverse Items
NR-Self	8	5, 7, 8, 12, 14, 16, 17, 21	1	14
NR-Perspective	7	2, 3, 11, 15, 18, 19, 20	5	2,3,11,15,18
NR-Experience	6	1, 4, 6, 9, 10, 13	2	10,13

Nature relatedness scale has been found as a significant and distinctive measurement to identify environment friendly behaviors within these three dimensions. Nature relatedness scale provides researchers to specify person-nature relationship cognitively, physically and affectively. Another important thing is that there is not any scale which measures the connection with nature in Turkish literature. From these points, the researchers Çakır, Karaarslan, Şahin and Ertepınar (2015) decided to adapt NR scale to Turkish.

In the process of adaptation, researchers took the characteristics of Turkish language, and the scale was applied to 859 university students. After the analyzing the data, Çakır et. al. (2015) found that all of the three dimensions of NR scale was statistically correlated with each other. They had found the similar results which were achieved by Nisbet et al. (2009). The results of confirmatory factor analysis indicated that Turkish version of the scale was compatible with the original NR scale. Cronbach's alpha coefficient was found as .88. And, for the dimensions of NR-experience, NR-perspective and NR-self, Cronbach's alpha coefficient was found as .73, .74, and .87, respectively. All of the statistical results had shown that Turkish version of NR scale is a valid and reliable scale to assess the level of nature relatedness of participants. Turkish version of NR scale is also successful to explain three dimensions of NR.

Studies about nature relatedness have shown that NR correlates with the indicators of positive psychological health rather than negative mental health. Hence, it can be said that NR is a very good measure to promote well-being and other aspects of positive mental health (Dean et al., 2018). By taking this fact into consideration, this study aimed to indicate any significant relationship between mental well-being and NR.

In the present study, Cronbach's alpha coefficient was found as .83 which reflect high internal consistency among all of the items. Cronbach alpha coefficient for NR-experience, NR-perspective and NR-self was found as .72, .64 and .80, respectively. These results were consistent with the adaptation study of Çakır et al. (2015) and it can be said that internal consistency of the scale is high enough to indicate the data's reliability.

3.4.5. Warwick-Edinburgh Mental Well-Being Scale (WEMWBS)

The other scale which was used in this study is Warwick-Edinburgh Mental Well-being Scale (WEMWBS). The Warwick-Edinburgh Mental Well-being scale was developed to fill the need for monitoring mental well-being of the general population and it contributed to the projects and the policies which aimed to improve mental well-being. It was developed by Tennant et al. in 2007, building on previous scales about well-being in order to capture the all dimensions of well-being like cognitive dimensions, emotional dimensions and psychological functions together in a form which is adequately short to be used on large populations (Tennant et al., 2007). It is a Likert scale which has 14 items with 5 possible answers ranging from 1 (strongly disagree) to 5 (strongly agree). Its score can totally range from 14-70. There are no reverse scored items in this scale and the items were developed in positive meanings like "I am optimistic about future." And it covers positive affect and positive functioning aspects of mental well-being (Stewart-Brown & Jan Mohamed 2008).

Although there are lots of instruments which measure different aspects of well-being, Warwick-Edinburgh Mental Well-being Scale is different. The scale is consisted of positive subdimensions and because of these positive subdimensions, WEMWBS measures mental well-being positively and use of it is also feasible in psychological research (Keldal, 2015).

In the present study, the Turkish version of WEMWBS was used. In 2015, Keldal made a comprehensive study to obtain a reliable and valid version of the scale. In this study, total 371 participants, whose ages ranged 16 to 70 participated. Once, the items were translated into Turkish, they were retranslated into English to increase language validation. Both of confirmatory factor analysis and exploratory analysis were conducted in this study to describe construct validity. Criterion validity was achieved through the correlation of the similar instruments -Oxford Happiness Scale, Subjective Well-Being Scale, Psychological Well-Being Scale, Personal Well-Being Index, and Life Satisfaction Scale-. It has been found that there are significant correlations between WEMWBS and other scales which measure similar characteristics. After conducting all the types of analyses, the reliability of the scale was found very high. Cronbach's alpha coefficient was found as .92. According to the results, it can be suggested that 'Turkish version of WEMWBS has a single-factor structure and it is a

valid and reliable instrument that can be used to assess mental well-being (Keldal, 2015).

In the present study, Cronbach's alpha coefficient was found as .90. This result was also consistent with the result of Keldal's (2015) adaptation study. In addition, because of the fact that any Cronbach's alpha coefficient which is bigger than .70 indicates that the internal reliability is valid for the measurement (Büyüköztürk, 2018), it can be said that this scale had a high level of reliability scores.

3.5. Collecting Data

In order to achieve the necessary permissions and to be able to use the Turkish version NR scale and Turkish version of WEMWB scale, Birgül Çakır and Gökay Keldal was contacted through e-mail, respectively. The researchers who were responsible for the adaptation of the both of scales gave written permissions to the researcher of this study. Before starting to collect the data through these instruments, the necessary permissions were taken from the ethics committee of Ibn Haldun University, as well.

First of all, the data started to be collected through the researcher's own social network. Due to the fact that, this study does not claim any direct representation of the main population, the researcher tried to find any college students who filled the research criteria. As it was mentioned above, students' mail lists and online student groups were used. Some of the participants helped the researcher to find participants within their own social network, as well. Online vehicles were used to achieve participants for time saving and feasibility reasons. Another reason is that, the researcher tried to reach different types of campus structures across the country. To be able to get the data from various cities within Turkey, online vehicles were chosen. Esurveycreator.com was used specifically. It is a student-friendly website which enables college students to create a structured survey freely. This website functions well not just on computers but on the mobile phones which was important for the participants who wanted to complete the survey on their mobile phone, easily. A link which was created by esurveycreator.com with an instruction was sent to online student groups and 366 students from 25 different cities were reached online. It took approximately 13 minutes

to complete the survey package through online and a fewer minutes more to complete by hand.

After this online process, the researcher tried to find participants from her own university in hand. By the permission of the university administer, the researcher set up a promotional table in front of dining hall which was the busiest place within the university. Attractive posters were hung around this table to get attention. Chocolates were offered to the passing students and students were asked whether they were willing or not willing to participate to the study. In addition, in order to increase the participation to the study, a book sweepstake was organized. Six popular books (Animal Farm/George Orwell, The Alchemist/Paulo Coelho, Chess Story/Stefan Zweig) were placed on the table and students were told that if they participated in the study, they could gain a chance to get one book from the selected books on the table. With this attractive organization, 76 students participated in the study. After getting the data in hand, 6 participants within these 76 participants were randomly selected and they had earned a popular book in return of the participation of the study as they were promised.

In a 2-months duration at the beginning of spring semester in 2019-2020 academic year, overall 442 students participated in this study. It should be highlighted that only volunteer participants took part in this study. After collecting data through online and through in hand, it was observed that participants were more enthusiastic to attend an online survey which they can simply complete on their phones any time they want than a hard copy instrument. Regarding the age average of the participants this observation can be considered as compatible with the behaviors of this young generation. Like Twenge (2018, p.84) mentioned in his book 'I-Gen', this young generation like spending much time on their phone than a real life setting.

3.6. Analyzing Data

In this thesis study, the quantitative data analysis methods were used. Quantitative data analysis can be described as analyzing numerical, measurable and observable data by using appropriate statistical techniques and measurements (Büyüköztürk, 2018). In order to analyze the findings of this study, IBM SPSS version 23 was used.

In order to examine means, frequencies, percentages, and standard deviations of the data, descriptive statistical analysis was used. Demographics characteristics of the participants and descriptive statistics of green campus space form were also reached by descriptive statistical analysis. Total time spent in nature, SES and the scores obtained from NR scale and mental well-being scale were compared by gender, marital status, working status through independent sample *t*-test as well. For comparison of education degree, one-way ANOVA was conducted. To analyze these values by comparing age scores, correlation analysis was used. Pearson correlational analysis was also used to detect any significant relationship between major study variables; nature relatedness, mental well-being, total time spent in nature and SES. Then, regression analysis was conducted to determine predictive role of nature relatedness, time spent in nature and SES on mental well-being.

Before analyzing the raw data, related assumptions needed to be checked prior to use of parametric tests like independent sample t-test, one way ANOVA, Pearson correlational analysis and multiple regression analysis. First of all, reverse scored items within the NR scale were transformed to analyze the data properly. Second, missing values within the data were detected and 12 participants due to the large number of missing values were excluded from the data set. Third, outliers or extreme values within the scores were detected through the Mahalanobis Distance and Z scores. Overall 26 number of outliers were detected and excluded from the data. Fourth, as a prerequisite for parametrical data analysis, normal distribution of the data was checked through test of normality. Also, skewness and kurtosis coefficients were checked to be certain about normality. Moreover, the assumptions of homoscedasticity, linearity, independence of errors, multivariate normality and multicollinearity were among the variables checked. Thus, before each type of analysis, the necessary assumptions were checked first.

For all types of analysis, the alpha level (type I error rate) of 0.05 ($p<0.05$) was chosen as the degree of statistical significance. Significance of the statistics was detected with this alpha level along with the effect size. Effect size indicates the explained variance by the independent variable on the dependent variable. According to the calculations of Cohen's d that will be presented as *d*, the effect size lesser than .2 is considered as

small, the effect size nearer .5 is considered as medium and the effect size .8 and more are considered as large/high (Kılıç, 2014).

3.7. Limitations of the Study

There are some limitations in this thesis study and it might be helpful to consider the limitations of this study in order to evaluate the findings properly. The biggest limitation of this study was the chosen sampling method to achieve data. Convenience sampling method was chosen for its practicality and feasibility. Due to the nature of this sampling method, it is possible there is some sample selection bias. Hence, selection of the participants might influence the outcomes. This situation can negatively affect the internal validity of this study. The external threat of this study is that because of the narrow characteristics of the participants in the study, it is very difficult and maybe unrealistic to generalize the results to the population who does not have these characteristics.

Furthermore, as mentioned in the previous sections, the nature of this survey design is cross-sectional. This situation can cause another limitation within the study because in cross-sectional designs, the researchers achieve the data at one point in time and do not have any further opportunities to evaluate the reports and to predict any other outcomes.

Finally, the external factors which were faced during the conducting of this study might have affected the outcomes. Spring term of 2019-2020 academic year was cancelled by the government authorities because of the Covid-19 outbreak within Turkey and all around the world. All universities began to continue their education through online. This was another reason of choosing convenience sampling method and choosing online tools to achieve data. Neither participants nor the researcher have experienced this kind of life changing situation before. Although, the data collection procedure was completed just before the outbreak in Turkey, it might still affect the mental well-being scores of the participants because of the nature of the pandemic around the world. Also, it was very difficult to meet with the advisors of this thesis study because of the social isolation process. Achieving less guidance and advice might negatively affect the quality of this study.

CHAPTER IV

RESULTS

In this chapter, the results which were derived from statistical analysis are presented in terms of the research questions of the study. Necessary assumptions were checked at the beginning of each analysis in order to achieve valid and reliable results. In this respect, preliminary analyses were conducted first and then descriptive statistics, correlation analyses, and hierarchical regression analysis of the major variables within the study were given in each section.

4.1. Preliminary Analyses

A total number of 442 participants were reached for this thesis study in the data collection process. Due to the fact that 12 participants did not complete the survey items fully, these 12 cases were excluded from the study as a data cleaning procedure. This method is preferable especially if few participants have missing values and if there is a large enough sample (Kang, 2013; Çokluk, Şekercioğlu & Büyüköztürk, 2014).

After this procedure, missing values were tried to detect for each scale and it was found that there was no missing data in the scales. Then, outliers or extreme values within the scores were detected through Mahalanobis Distance. Mahalanobis Distance's accepted criterion for multivariate outliers is considered as $p<.001$ (Tabachnik & Fidell, 2013). By calculating critical chi-square value, the Mahalanobis Distance value for each variable was determined. It was observed that 5 multivariate outliers were in the data set when Mahalanobis Distance values were calculated (*Mahalanobis Distance* = 12.86, $df = 3$, $p = .001$). Although NR scores and well-being scores of the participants were normally distributed, total time spent in nature and SES variables were not normally distributed. Thus, by detecting Z scores for SES and time spent in nature, outliers within these two variables were detected. 21 extreme values were there

in the data set when Z scores were analyzed. These total 26 outliers were excluded from the data set. Hence, the final sample consisted of 404 participants.

4.2. Descriptive Statistics of the Study

This section presents demographic characteristics of the participants as well as details of green campus space form in terms of frequencies and percentages.

4.2.1. Demographic Characteristics of the Participants

Table 4.1. Frequencies about education degree, gender, marital status, employment and residential town of the participants (*N*=404)

Variable	Factor	Frequencies	Percentage (%)
Education Degree	Preparation	31	7.7
	Undergraduate	307	76.0
	Graduate	51	12.6
	Doctorate	15	3.7
Gender	Female	301	75.5
	Male	103	25.5
Marital Status	Married	38	9.4
	Single	366	90.6
Employment	Employee	103	25.5
	Unemployed	301	75.5
Residential Town	Istanbul	322	79.7
	Other	82	20.3

According to Table 4.1, the sample of this study consisted mainly of female (75.5%), undergraduate (76.0%), single (90.6%) and unemployed (75.5%) college students. It can also be stated that although a total of 25 different towns were included in this study, majority of the students were educated in Istanbul (79.7%), the largest metropolis of Turkey.

Table 4.2. Participants' age in terms of minimum, maximum and mean scores (*N*=404)

Variable	Minimum	Maximum	Mean	Median	SD
Age	18	45	22.03	21	3.67

Table 4.2. presents the average age of the participants which was 22.03 (*SD*=3.67) within the scope of 18 to 45.

4.2.2. Descriptive Statistics of Green Campus Space Form

In order to elaborate the data, the green campus space form was created by considering the existing literature as mentioned in the previous chapter. College students who took part in this study were distributed into two categories in terms of their campuses' existing green space. Students who do not have any greenery in their campus area were directed to fill NR Scale and WEMWB Scale. Students who have campus greenery were firstly directed to complete the green campus space form and then to fill NR Scale and WEMWB Scale. According to results, 261 students (64.6%) do have campus greenery whereas 143 students (35.4%) do not have any campus greenery. It can be stated that almost one third of the participants do not have any access to green space in their campus area. Figure 4.1. presents this distribution.

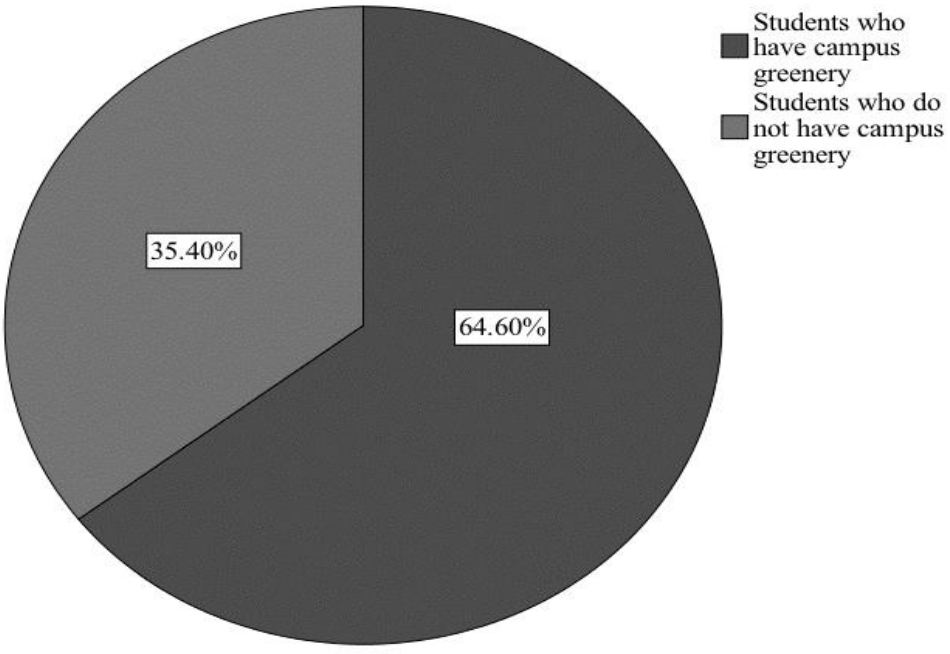

Figure 4.1. Distribution of participants in terms of campus greenery

Hence, the sample of green campus space form consisted of 261 participants who have green space in their campus area. The very first question on this form was created to detect the time which was spent in the green campus area on a weekly basis. Numerical value of this data is shown in the following table.

Table 4.3. Participants' weekly time which was spent in green campus space in terms of minimum, maximum and mean scores (*N*=261)

Variable	Minimum	Maximum	Mean	Median	SD
Time Spent in Green Campus Space (Hour)	0	15	2.41	1	2.33

In order to elaborate on this information about weekly spent time in greenery at campus, a detailed table is presented below. The following table describes the time spent in green campus space in terms of demographic variables such as education degree, gender, marital status, and employment. Due to the fact that total time spent in green campus space was not normally distributed, non-parametric analysis (Mann Whitney U and Kruskal Wallis) were used for the comparisons.

Table 4.4. Participants' time spent in green campus space in terms of demographic variables (*N*=261)

Variable	Factor	Levels	Number of the participants	Mean Rank	U/Chi square	p
Time Spent in Green Campus Space (Hour)	Education Level	Preparation	17	120	4.90	0.179
		Undergraduate	199	136		
		Graduate	35	117		
		Doctorate	10	96		
	Gender	Female	204	131	5648.00	0.732
		Male	57	128		
	Marital Status	Married	29	101	2501.50	0.019
		Single	232	134		
	Employment Status	Employee	67	120	5777.00	0.159
		Unemployed	194	134		

Table 4.4. Indicates that the only significant difference in terms of spending time in campus greenery was between married and single students. According to this table, single students spend more time in campus green space than married students ($U=2501.50$, $p<0.05$).

The second question on this form intended to enhance the variety of activities which were done in these specified times. With this question, an attempt was made to try to detect the functionality of these green spaces in campus areas. A couple of options were presented to the participants as well as open ended text field in case there might be another type of activity than the form has suggested. The frequencies and percentages of these activities are shown in the following table.

Table 4.5. Participants' activities in green campus space in terms of frequencies and percentages (*N*=261)

Activity	Frequency	Percentage (%)
Relaxing	200	76.6
Socializing/ Hanging with friends	200	76.6
Eating/ Snacking	162	62.1
Taking a walk	148	56.7
Studying/ Reading	103	39.5
Taking care of the animals within campus	31	11.9
Riding bicycle	5	1.9
Exercising	5	1.9

Table 4.5. presents that college students spent their time in campus greenery mostly by relaxing (76.6%) and by hanging out with friends and socializing (76.6%). These activities are followed by eating (62.1%), taking a walk (56.7%) and studying/reading (39.5%) in campus greenery. Riding a bicycle (1.9%) or doing exercise (1.9%) were not the preferred activities for this sample. It also shows that a considerable number of students preferred to spend their time in campus greenery by taking care of the animals within campus (11.9%). The other activities which were stated by the participants in the open-ended text field are; talking on phone, listening music, surfing on social media, taking photographs, watching the sceneries like sunset and taking a break to smoke.

The gender differences about these activities indicated that female college students used campus green spaces for relaxing (79.4%), eating (63.7), and studying (42.2%) more than male college students. On the other hand, male college students used these spaces for taking a walk (64.9%) and exercising (5.9%) more than female college

students. Both genders used these spaces for hanging out with the friends (76% -78%) and taking care of the animals within campus almost (12.3%-10.9%) at the same level.

The third question on this form was created to examine the obstacles which were faced in spending time or accessing campus greenery. This question tried to detect factors preventing the accessing of campus greenery. A couple of options were presented to the participants as well as open ended text field in case there might be another type of obstacles than the form has suggested. The frequencies and percentages of these activities are shown in the following table.

Table 4.6. Participants' obstacles of accessing/using green campus space in terms of frequencies and percentages (*N*=261)

Obstacle	Frequency	Percentage (%)
Being very busy	198	75.9
Unfavorable weather conditions	193	73.9
Very limited green area	85	32.6
Educational buildings being distant from campus greenery	45	17.2
Being disturbed about insects and animals in campus greenery	25	9.6
Not being interested	24	9.2

Table 4.6. indicates that the biggest obstacles of using campus greenery were being very busy/not having enough time (75.9%) to spend time in campus greenery and unfavorable weather conditions (73.9%) like very hot or cold weather. A considerable number of students (32.6%) stated that although they have campus greenery, it is still very small and limited to spend some time within. Also, some of the participants (17.2%) stated that the buildings which they were educated at, were very distant from these green areas. A limited number of the participants (9.2%) stated that they did not spend time in campus greenery because they were not interested and they were disturbed by some other elements in campus greenery like insects or animals (9.6%). The other obstacles which were stated by the participants in the open-ended text field are; huge number of smokers who capture the campus greenery, green spaces were

crowded, not feeling safe to spend time in green spaces, being more attracted to spend time on computer and phone and not going often to campus and lectures at all.

The fourth question on this form tried to detect participants' relation with nature/green spaces even if they stay inside the campus buildings. This question tried to examine, college students' desire to connect with campus green spaces without the effects of any kind of obstacles. It was found that 206 (78.9%) students preferred to watch natural elements like sky, trees, green areas, animals, sea etc. from windows even if they stayed inside of the buildings whereas 55 (21.1%) students did not preferred this action. It can be stated that almost four in five of the participants chose to connect with natural elements when they had to stay inside of the buildings. Figure 4.2. presents this distribution.

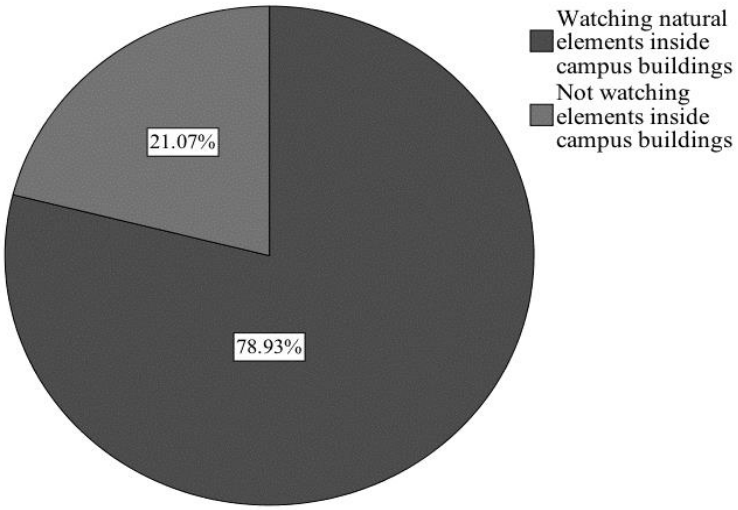

Figure 4.2. Distribution of participants in terms of connecting natural elements inside of the campus buildings

4.3. Differences within Major Study Variables in terms of Demographic Characteristics

This section presents the statistical differences within nature relatedness score, mental well-being score, total time spent in nature and SES in terms of demographic variables like gender, employment, marital status, age, and education degree, respectively. The necessary assumptions for each specific analysis were presented first and then data analysis results were examined.

4.3.1. Differences within Nature Relatedness Scores in terms of Demographic Variables

The overall nature relatedness scores of the participants are shown in the following table.

Table 4.7. Participants' NR scores in terms of minimum, maximum and mean scores (*N*=404)

Variable	Minimum	Maximum	Mean	Median	SD
Nature Relatedness	47	104	80.01	81	10.65

In order to examine NR scores of the participants in terms of gender differences, marital status differences and employment status differences, independent sample *t*-tests were executed. For this analysis, normality and homoscedasticity assumptions were checked first for each variable. Skewness and kurtosis values of the groups within these three variables were in between -1 and +1. Hence, there is no violation for normality (Tabachnik & Fidell, 2013). For homoscedasticity, the significant value was found as .168, .242, and .331 for gender, employment status and marital status, respectively. Thus, there is no violation for the homogeneity assumption either (p>0.05). Independent sample *t*-tests' results are shown in the following table.

Table 4.8. Participants' independent sample t-test results of nature relatedness in terms of gender, employment and marital status (*N*=404)

Variable	Factor	Level	Frequency	Mean	SD	t	p
Nature Relatedness	Gender	Female	301	80.66	10.35	2.08	0.038
		Male	103	78.13	11.30		
	Employment	Employee	103	80.61	9.89	0.65	0.512
		301	79.81	10.90	301		
	Marital Status	Married	38	81.73	8.98	1.04	0.296
		Single	366	79.83	10.80		

Table 4.8. indicates that there is a statistically significant difference in NR scores between both genders. According to this table, NR scores of female college students ($\bar{X} = 80.66$) are higher than male college students ($\bar{X} = 78.13$) [t_{402}=2.08 (0.038<0.05)]. When the effect size (*d*=0,23) was examined it was found that gender differences had a small effect on NR scores (Kılıç, 2014). This table also indicates that there is not a statistically significant difference in NR scores between employed students and unemployed students [t_{402}=0.656(0.512>0.05)]. Also, there was not found any statistically significant difference in NR scores between married and single students [t_{402}=1.04(0.296>0.05)].

In order to examine NR scores of the participants in terms of age differences, correlation analysis was executed. For this analysis, normality assumption was checked first. Skewness and Kurtosis values of the variable were not in between -1 and +1 for variable of age. Hence, a violation for normality was detected. For this reason, Spearman Rank Correlation analysis (Spearman's rho=r_s) was employed. Correlation results are shown in the following table.

Table 4.9. Participants' correlation results of nature relatedness in terms of age (*N*=404)

Variable	Frequency	r_s	p
Nature Relatedness & Age	404	0.05	0.272

Table 4.9. indicates that there is not a statistically significant relationship between NR scores and age (*p*>0.05). It can be said that an increase or decrease within age did not impact the NR scores of the sample.

In order to examine NR scores of the participants in terms of educational degree differences, one-way ANOVA analysis was executed because there are four different ranking groups; doctorate, graduate, undergraduate and preparation class. For this analysis, normality and homoscedasticity assumptions were checked first. Kolmogorov-Smirnov values had shown that normality was validated with doctorate, preparation class and graduate students (*p*>0.05). For undergraduate students, Skewness and Kurtosis values were checked and it was found that the values were in between +1 and -1. Hence, normality was achieved (Tabachnik & Fidell, 2013).

Levene test was conducted to examine homogeneity of the variances and the result (.749) indicated that the assumption was held. One-way ANOVA results are shown in the following table.

Table 4.10. Participants' ANOVA results of nature relatedness in terms of education degree (*N*=404)

Source of variability	Sum of Squares	df	Mean Square	F	p
Between groups	1226.59	3	408.86	3.67	0.012
Within groups	44490.28	400	111.22		
Total	45716.87	403			

Table 4.10. indicates that the total NR scores were significantly different with respect to education degree of students, $F_{(3,401)}$ =3.67, p<.05. In order to decide the differences within groups Scheffe results were checked and it was determined that preparation class students ($\bar{X} = 78.66$) and undergraduate students ($\bar{X} = 79.17$) were less nature related in comparison to graduate ($\bar{X} = 82.90$) and doctorate students ($\bar{X} = 84.25$) Scheffe table is shown below. When the effect size (d =0,16) was examined it was found that education degree levels had a small effect on NR scores (Kılıç, 2014).

Table 4.11. Scheffe results of nature relatedness in terms of education degree (*N*=404)

Source	Education Degree	Frequency	Subset for alpha = 0.05
			1
Scheffe	Preparation	31	78.66
	Undergraduate	307	79.17
	Graduate	51	82.90
	Doctorate	15	84.25
p			0.204

4.3.2. Differences within Mental Well-Being Scores in terms of Demographic Variables

The overall mental well-being scores of the participants are shown in the table 4.12.

Table 4.12. Participants' overall mental well-being scores in terms of minimum, maximum and mean scores (*N*=404)

Variable	Minimum	Maximum	Mean	Median	SD
Mental Well-Being	18	70	49.07	50	9.71

In order to examine mental well-being scores of the participants in terms of gender, employment and marital status differences, independent sample *t*-tests were employed. For these analysis, normality and homoscedasticity assumptions were checked first. Skewness and kurtosis values of the groups within these three variables were in between -1 and +1. Hence, there is no violation for normality (Tabachnik & Fidell, 2013). For homoscedasticity, the significant value was found as .211, .727, .116 for gender, employment and marital status, respectively. Thus, homogeneity was held for each factor, as well (p>0.05). Independent sample *t*-tests' results are shown in the following table.

Table 4.13. Participants' independent sample t-test results of mental well-being scores in terms of gender, employment and marital status (*N*=404)

Variable	Factor	Level	Frequency	Mean	SD	t	p
Mental Well-Being	Gender	Female	301	48.03	9.81	- 3.71	0.000
		Male	103	52.10	8.76		
	Employment Status	Employee	103	51.37	9.65	2.81	0.005
		Unemployed	301	48.28	9.62		
	Marital Status	Married	38	52.05	7.49	1.99	0.047
		Single	366	48.76	9.87		

Table 4.13. indicates that there is a statistically significant difference in mental well-being scores between both genders. According to this table, mental well-being scores of male college students are higher than female college students [t_{402}=-3.71 (0.00<0.05)]. When the effect size (*d*=0.43) was examined, it was found that gender differences had a medium effect on mental well-being scores. Also, mental well-being scores of employed college students are presented as higher than unemployed college students [t_{402}=2.81(0.005<0.05)]. When the effect size (*d*=0,32) was examined, it was found that employment differences had a slightly medium effect on mental well-being scores. Moreover, as it can be seen above, mental well-being scores of married students are significantly higher than single college students [t_{402}=1.99(0.047<0.05)]. And, the effect size (*d*=0,37) indicated that this difference within marital status had a slightly medium effect on mental well-being scores (Kılıç, 2014).

In order to examine mental well-being scores of the participants in terms of age differences, correlational analysis was executed. For this analysis, normality assumption was checked first. Skewness and Kurtosis values of the age variable were not in between -1 and +1 for age variable. Hence, a violation for normality was detected. For this reason, Spearman Rank Correlation analysis (Spearman's rho=r_s) was executed. Correlation results are shown in the following table.

Table 4.14. Participants' correlation results of mental well-being scores in terms of age (*N*=404)

Variable	Frequency	r_s	p
Mental Well-Being & Age	404	0.05	0.297

Table 4.14. indicates that there is not a statistically significant relationship between mental well-being scores and age (*p*>0.05). It can be said that an increase or decrease within age did not impact the mental well-being scores of the sample.

In order to examine mental well-being scores of the participants in terms of educational degree differences, one-way ANOVA analysis was executed because there are four different ranking groups; doctorate, graduate, undergraduate and preparation class. For this analysis, normality and homoscedasticity assumptions were checked first.

Kolmogorov-Smirnov values had shown that normality was validated with doctorate, preparation class and graduate students (p>0.05). For undergraduate students, Skewness and Kurtosis values were checked and it was found that the values were in between +1 and -1. Hence, overall normality was achieved for each group (Tabachnik & Fidell, 2013). Levene test was executed to examine homogeneity of the variable and it was found as .525 which indicated adequate level of homogeneity. One-way ANOVA results are shown in the following table.

Table 4.15. Participants' ANOVA results of mental well-being scores in terms of education degree (N=404)

Source of variability	Sum of Squares	df	Mean Square	F	p
Between groups	199.55	3	66.51	0.70	0.551
Within groups	37849.36	400	94.62		
Total	38048.91	403			

Table 4.15. indicates that the mental well-being scores were not significantly different with respect to education degree of students [$F_{(3,400)}$ =.703, p>.05)]. It can be said that mental well-being scores of college students did not differ in terms of the level of education degree.

4.3.3. Differences within Total Time Spent in Nature in terms of Demographic Variables

The overall spent time in nature of the participants on a weekly basis are shown in the following table.

Table 4.16. Participants' overall spent time in nature in terms of minimum, maximum and mean scores (N=404)

Variable	Minimum	Maximum	Mean	Median	SD
Time Spent in Nature	0	19	4.33	3	3.77

Before analyzing the total time scores which was spent in nature in terms of demographic variables, it is important to detect difference in total time scores between the students who have campus greenery at their universities and the students who do not have any campus greenery at their universities. Skewness and kurtosis values exhibit that these two groups' scores were normally distributed. However, the Levene test's result (0.02<0.05) indicated that homogeneity of variance was violated. Hence, instead of independent sample t-test, Mann-Whitney U test was conducted. The results are shown in the following table.

Table 4.17. Participants' time within nature scores in terms of campus greenery (*N*=404)

Variable	Factor	Levels	Number of the participants	Mean Rank	U	p
Time Spent in Nature	Campus greenery	Existed	261	229.53	11501.55	0.000
		Not existed	143	152.43		

Table 4.17. indicates that there is a statistically significant difference in total time scores in terms of existed campus greenery. According to this table, time within nature scores of students who have campus greenery are higher than other college students (U=11501.55, p<0.05).

In order to examine the participants' total time scores which were spent in nature in terms of gender, employment and marital status differences, independent sample *t*-test was employed. For this analysis, normality and homoscedasticity assumptions were checked first. Skewness and Kurtosis values of the variables within these three groups were in between -2 and +2. Hence, a violation for normality was not detected (George & Mallery, 2010). Also, homoscedasticity was found as .425, .410, .662 for gender, employment and marital status, respectively showing that there is no violation for homogeneity assumption either (p>0.05). Independent sample *t*-tests,' results are shown in the following table.

Table 4.18. Participants' t-test results of total time spent in nature in terms of gender, employment and marital status (*N*=404)

Variable	Factor	Level	Frequency	Mean	SD	t	p
Total Time Spent in Nature	Gender	Male	103	4.39	3.66	0.48	0.631
		Female	301	4.18	4.10		
	Employment	Employee	103	4.67	3.92	1.06	0.290
		Unemployed	301	4.22	3.72		
	Marital Status	Married	38	4.15	0.79	-0.31	0.757
		Single	366	4.35	0.83		

Table 4.18. indicates that there is not a statistically significant difference in total time scores which were spent in nature in terms of gender [t_{402}=0.481(0.631>0.05)], employment [t_{402}=1.06(0.290>0.05)] and marital status[t_{402}=-0.310(0.757>0.05)]. These results reported that time within nature scores did not differ in terms of gender, employment and marital status. All different groups spent similar amount of time within nature on a weekly basis.

In order to examine the participants' total time scores which were spent in nature in terms of age differences, correlational analysis was executed. For this analysis, normality assumption was checked first. Skewness and kurtosis values of the age variable were not in between -2 and +2. Hence, a violation for normality was detected. For this reason, Spearman Rank Correlation analysis (Spearman's rho=r_s) was executed. Correlation results are shown in the following table.

Table 4.19. Participants' correlation results of total time spent in nature in terms of age (*N*=404)

Variable	Frequency	r_s	p
Time Spent in Nature & Age	404	-0.01	0.794

Table 4.19. indicates that there is not a statistically significant relationship between total time spent in nature and age (p>0.05). It can be said that an increase or decrease in the age did not cause any difference in time spent in nature scores.

In order to examine total time scores which were spent in nature in terms of educational degree differences, one-way ANOVA analysis was employed because there are four different ranking groups; doctorate, graduate, undergraduate and preparation class. For this analysis, normality and homoscedasticity assumptions were checked first. It was detected that all skewness and kurtosis variables were in between -2 and +2 for these four groups. Hence, normality was achieved (George & Mallery, 2010). For homogeneity, Levene test was executed and it was found as .623 showing that homogeneity was held (p>0.05). The results are shown in the following table.

Table 4.20. Participants' results of total time spent in nature in terms of education degree (*N*=404)

Source of variability	Sum of Squares	df	Mean Square	F	p
Between groups	10.19	3	3.40	0.23	0.871
Within groups	5742.34	400	14.35		
Total	5752.54	403			

Table 4.20. indicates that the total time spent in nature scores were not significantly different with respect to education degree of students [$F_{(3,400)}$ =0.871, p>.05)].

4.3.4. Differences within SES Scores in terms of Demographic Variables

The overall SES values (monthly income for desired activities of Turkish Lira) of the participants are shown in the following table.

Table 4.21. Participants' SES in terms of minimum, maximum and mean scores (*N*=404)

Variable	Minimum	Maximum	Mean	Median	SD
SES	10	1500	413.76	350	274.05

In order to examine the participants' SES scores in terms of gender, employment and marital status differences, independent sample *t*-tests were conducted. For this analysis, normality and homoscedasticity assumptions were checked first. Skewness and kurtosis values within these three groups were in between -2 and +2. Hence, a violation for normality was not detected (George & Mallery, 2010). Homogeneity was found as .304, .086, .513 for gender, employment and marital status, respectively. These results indicated that there is no violation for homogeneity assumption either (p>0.05). Independent sample *t*-tests' results were shown in the following table.

Table 4.22. Participants' t-test results of SES in terms of gender, marital status and employment (*N*=404)

Variable	Factor	Level	Frequency	Mean	SD	t	p
SES	Gender	Female	301	396.87	265.99	-2.12	0.034
		Male	103	463.10	292.13		
	Employment	Unemployed	301	400.73	314.76	1.63	0.102
		Employee	103	451.84	257.94		
	Marital Status	Married	38	443.42	249.36	0.70	0.484
		Single	366	410.68	276.62		

Table 4.22. indicates that there is a statistically significant difference in SES scores in terms of gender. According to this table, SES scores of male students are higher than female college students [t_{402}= -2.12(0.034<0.05)]. When the effect size (d=0,24) was examined it was found that gender differences had a significant but small effect on SES scores (Kılıç, 2014). On the other hand, as it can be seen in table, there is not a statistically significant difference in SES scores in terms of employment status [t_{402}=1.63(0.102>0.05)] and marital status[t_{402}=0.700(0.484>0.05)].

In order to examine the participants' SES scores in terms of age differences, correlational analysis was executed. For this analysis, normality assumption was checked first. Skewness and Kurtosis values of the age variable were not in between -2 and +2. Hence, a violation for normality was detected. For this reason, Spearman

Rank Correlation analysis (Spearman's rho=r_s) was used. Correlation results were shown in the following table.

Table 4.23. Participants' correlation results of SES scores in terms of age (*N*=404)

Variable	Frequency	r_s	p
SES & Age	404	-0.01	.977

Table 4.23. indicates that there is not a statistically significant relationship between SES and age (p>0.05). Age scores of college students did not cause any change in SES scores.

In order to examine SES scores in terms of educational degree differences, one-way ANOVA analysis was employed because there are four different ranking groups; doctorate, graduate, undergraduate and preparation class. For this analysis, normality and homoscedasticity assumptions were checked first. It was detected that for all subgroups, skewness and kurtosis variables were in between -2 and +2. Hence, normality was achieved (George & Mallery, 2010). For homogeneity, Levene test was executed and it was found as .511 showing that homogeneity assumption was held, as well (p>0.05). The results were shown in the following table.

Table 4.24. Participants' results of SES scores in terms of education degree (*N*=404)

Source of variability	Sum of Squares	df	Mean Square	F	p
Between groups	132668.72	3	44222.90	0.58	.624
Within groups	30135212.46	400	75338.03		
Total	30267881.18	403			

Table 4.24. indicates that the SES scores were not significantly different with respect to education degree of students [$F_{(3,400)}$ =.624, p>.05)].

4.4. Correlation Matrices of the Major Study Variables

In order to compare the correlation among major study variables which were SES, total time scores which were spent in nature, nature relatedness and mental well-being scores, Pearson Correlation Coefficients were executed. Before this correlation analysis, normality was checked for each variable and it was found that all skewness and kurtosis values for each variable were in between -2 and +2. Hence, normality was achieved (George & Mallery, 2010). Pearson Correlation results are shown in the flowing table.

Table 4.25. Pearson Correlation Matrices of the Major Study variables (*N*=404)

	NR	Mental Well-Being	Time within Nature	SES
Nature Relatedness	1	.19*	.16*	-.06
Mental Well-Being		1	.19*	.06
Total Time Scores within Nature			1	.10*
SES				1

** Correlation is significant at the 0.05 level (2-tailed)*

As seen in Table 4.25, there are statistically significant relationships between some of the major study variables. Mental well-being scores was significantly and positively correlated with NR scores (r=.19, p<0.05). When the coefficient determination was calculated, it can be stated that NR scores can explain a very limited percent (3%) of the overall mental well-being scores (r^2=0,037). Mental well-being scores were also significantly and positively correlated with total time scores within nature (r=.19, p<0.05). When the coefficient determination was calculated, it can be stated that total time scores can explain a very limited percentage (3%) of the overall mental well-being scores (r^2=0,03). Nature relatedness was significantly correlated with total time scores within nature (r=.16, p<0.05). Coefficient correlation indicated that NR scores can only explain a very limited percentage of time scores (2%) within nature. Total time scores within nature was significantly and positively correlated with SES scores (r=.10, p<0.05). Coefficient correlation indicated that total time scores within nature

can explain a very limited percentage (%1) of SES scores. Also, there is not a statistically significant relationship between SES scores and mental well-being (r=.06, p>0.05) and SES scores and NR (r=-.06, p>0.05)

4.5. Correlation Analysis about the dimensions of NR Scale

As it was mentioned in the previous chapter, there are three different dimensions in Nature Relatedness Scale; NR-self, NR-perspective and NR-experience. In this section, partial correlation analysis will be executed between these dimension and well-being. Partial correlation analysis attempts to find a correlation between two variables while controlling or conditioning one or more other variables. Even though partial correlation does not mean causal relationship, it can direct attention to causal inference by excluding many other possibilities from the analysis (La Fuente, Bing, Hoeschele & Mendes, 2004). Before this analysis, normality distribution was checked for all three dimensions and it was found that Skewness and Kurtosis values for all variables were in between -1 and +1. Thus, normality was achieved (Büyüköztürk, 2018). Partial correlation analysis results are shown in the following table.

Table 4.26. Partial Correlation Analysis between NR dimensions and Mental Well-Being
(N=404)

Partial Correlation	Controlling Variables	r	p
NR-Self & Mental Well-Being	NR-Perspective, NR-Experience	.15*	.003
NR-Perspective & Mental Well-Being	NR-Self, NR-Experience	-.08	.094
NR-Experience & Mental Well-Being	NR-Self, NR-Perspective	.06	.173

**Correlation is significant at the 0.05 level (2-tailed)*

Table 4.26. indicates that the only significant relationship among the dimensions of NR scale and mental well-being scores appears in between NR-self and mental well-being while controlling NR-perspective and NR-experience. NR-self and mental well-being was significantly and positively correlated with each other (r=.15 p<0.05).

In order to examine the correlation between NR dimensions and total time spent in nature, partial analysis was employed, as well. Normality was checked before analysis and all skewness and kurtosis values indicates that distribution is normal within total time within nature scores and all three dimensions. The results are shown in the following table.

Table 4.27. Partial Correlation Analysis between NR dimensions and Total Time Spent in Nature
(N=404)

Partial Correlation	Controlling Variables	r	p
NR-Self & Time spent in nature	NR-Perspective, NR-Experience	.02	.586
NR-Perspective & Time spent in nature	NR-Self, NR-Experience	.04	.360
NR-Experience & Time spent in nature	NR-Self, NR-Perspective	.10*	0.44

**Correlation is significant at the 0.05 level (2-tailed)*

Table 4.27. indicates that the only significant relationship among the dimensions of NR scale and time scores appears in between NR-experience and time spent in nature while controlling NR-self and NR-perspective. NR-experience and total time scores was significantly and positively correlated with each other (r=.10 p<0.05).

In addition, to be able to examine the whole perspective of the relationship between NR dimensions, mental well-being and total time spent in nature, Pearson Correlation matrices were executed. The results were shown in the following table.

Table 4.28. Pearson Correlation Matrices of the NR Dimensions
(*N*=404)

	NR-Self	NR-Perspective	NR-Experience	Mental Well-Being	Total time spent in nature
NR-Self	1	.30*	.65*	.23*	.13*
NR-Perspective		1	.17*	-.00	.08
NR-Experience			1	.20*	.15*
Mental Well-Being				1	.19*
Total time spent in nature					1

**Correlation is significant at the 0.05 level (2-tailed)*

Table 4.28 indicates that all three dimensions were correlated with each other and other two variables. NR-self was significantly and positively correlated with NR-perspective (r=.30, $p<0.05$), NR-experience (r=.65, $p<0.05$), mental well-being (r=.23, $p<0.05$) and with total time scores within nature (r=.13, $p<0.05$). NR-perspective was positively and significantly correlated with NR-experience (r=.17, $p<0.05$) and not statistically correlated with time spent in nature (r=.08, $p>0.01$) and well-being (r=-.00, $p>0.05$). Also, NR-experience was significantly and positively correlated with mental well-being (r=.20, $p<0.05$) and with total time spent in nature (r=.19 $p<0.05$).

4.6. Regression Analysis of the Study

In this section, regression analysis of the study was conducted. To increase the validity of the analysis, only two subscales of nature relatedness and time spent in nature were included in the regression equation. Due to the fact that there was no statistically significant relationship between SES and mental well-being (r=.06, $p<0.01$) and NR-perspective and mental well-being (r=-.00, $p>0.05$), these two variables were not included in the model. Hence, regression analysis continued with NR-self and NR-experience and time spent in nature as independent variables and mental well-being as dependent variable. As indicated in the previous sections, some demographic variables like gender, employment and marital status had some statistical importance on well-being for this sample, these variables were turned into dummy values and placed in

regression model, as well. Thus, hierarchical regression analysis models were created to detect the predictor roles for these variables.

Before regression analysis, necessary assumptions such as normality, homoscedasticity, linearity, multicollinearity, independence of errors were checked. Multivariate outliers had already been checked through Mahalanobis distance (*Mahalanobis Distance* = 12.86, *df* = 3, *p* = .001) and Z scores earlier in the chapter as preliminary analysis and outliers had already been excluded from the study.

In order to test normality, normal probability plot and histogram showing distribution standardized residuals were checked (Field, 2009).

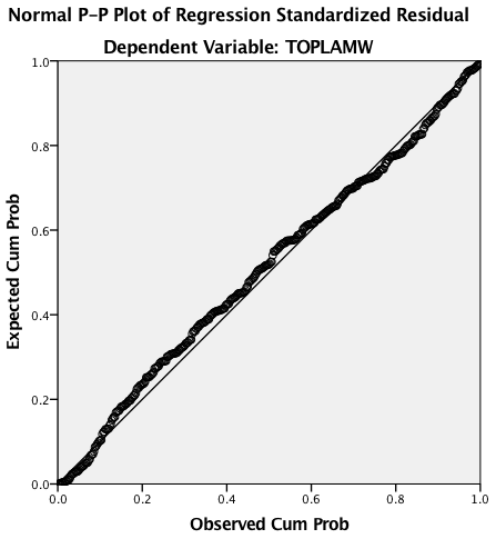

Figure 4.4. Normal P-Plot showing distribution standardized residuals

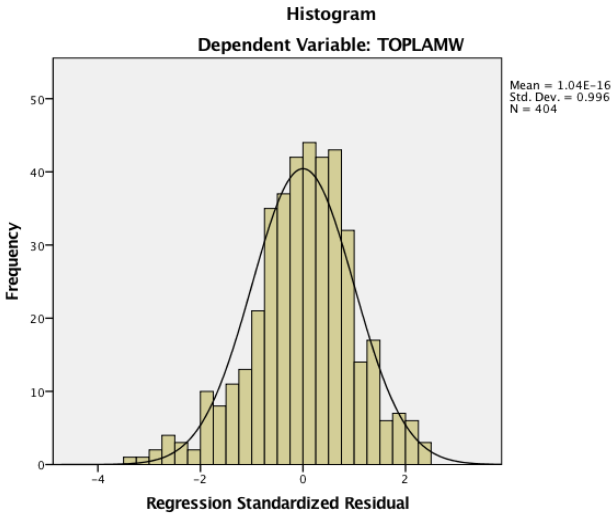

Figure 4.3. Histogram showing distribution standardized residuals

Figure 4.3. and Figure 4.4. indicate the distribution of normality to determine the impact of nature relatedness and time spent in nature on mental well-being. Figure 4.3. shows that there is almost no deviation from the normal distribution. In Figure 4.4., there is a slightly negative deviation from the normal but the distribution again is very close to normal. Hence normality was held.

In order to examine the homoscedasticity of the study, visual examination of the scatter plot between regression standardized residuals and predicted values were checked.

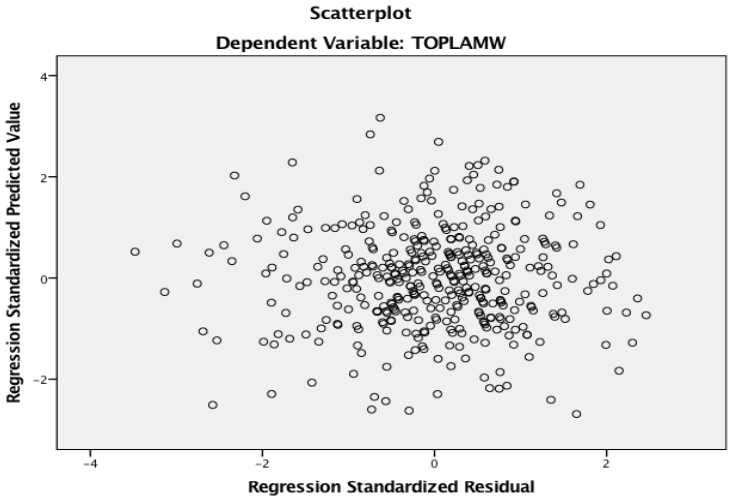

Figure 4.5. Distribution of the homoscedasticity of the residuals

Figure 4.5. indicates the visual examination between mental well-being and NR-self, NR-experience and time spent in nature as dependent variables. According to this figure, the residuals were randomly placed in the middle of chart and around other places. Thus, there is no violation for this assumption either.

In order to detect the linearity, partial plots for each independent variable on the dependent variable were checked by observing visual inspections of the scatter plots. These visual examinations indicated linear relationship between predictor variables on the criterion variable. Thus, no violation for linearity was observed.

To be unaffected by multicollinearity, strong relationships between independent variables were avoided. Multicollinearity occurs when the correlation between independent variables are very high (r >.90) (Tabachnik & Fidell, 2013). Correlation matrices of the major study variables and NR dimensions were checked and it was detected that there was not any high correlation between independent variables. Also, collinearity diagnostics of tolerance statistics should be higher than .20 and VIF value must be less than 4 (Field, 2009). In the present study, the highest VIF values was 1.75 and all tolerance values were bigger than .20.

In order to address the assumption regarding independence of errors, statics of Durbin-Watson was checked. The values within this statistic must be in between 1.5 and 2.5. (Field, 2009). In the present study, Durbin-Watson value was 2.23 and this value indicates that there is also no violation addressing this assumption.

After these assumptions, it was chosen to conducted hierarchical regression analysis. The hierarchical regression is a sequential regression analysis process which enables researchers to involve the predictor variables into the model step by step. Unlike other sequential regression analysis like stepwise regression analysis, it gives freedom about determining the order of criterion variables entering in the model. It is also very appropriate tool to analyze the model especially when there are predictor variables which are correlated with each other. Moreover, it is very useful to analyze the impact of predictor variables while controlling other variables by examining the change in the adjusted R^2 in every step on the analysis (Lewis, 2007). Due to the fact that all predictor variables in the present study were correlated with each other, this type of analysis was chosen. Also, there was an attempt to detect the impact of each predictor variable on the model by controlling the effects of other variables.. The results of hierarchical regression analysis are shown in the table 4.29.

Table 4.29. Results of Hierarchical Regression Analysis
(*N*=404)

Model I	B	SE	*β*	t	p	F	R^2	Adjusted R^2
(Constant)	34.62	2.89	.	11.95	.000	11.94*	0.082	0.07
Time spent in nature	0.40	0.12	0.15	3.25	.001			
NR-Self	0.31	.012	0.16	2.58	.010			
NR-Experience	0.14	0.13	0.07	1.12	.264			

Model II	B	SE	*β*	t	p	F	R^2	Adjusted R^2
(Constant)	32.92	2.84	.	11.5	.000	12.27*	0.139	0.12
Time spent in nature	0.42	0.12	0.16	3.48	.001			
NR-Self	0.40	0.09	0.21	4.47	.000			
Gender	4.29	1.04	0.19	4.09	.000			
Employment	1.73	1.09	0.07	1.58	.115			
Marital Status	2.46	1.63	0.08	1.51	.132			

**Correlation is significant at the 0.05 level (2-tailed)*

(B=Unstandardized coefficient, β=Standardized coefficient, SE=Standard Error, t=Coefficient divided by standard error, p=Statistical Significance, R^2 =Explained variance, F=F Statistics)

As it can be seen in the table 4.29, both models were statistically significant. In the first model, all of the three variables had contributed the regression equation (R^2 = .08, $F_{(3;402)}$ = 11.94, p < .05) but only time spent in nature (β = .15, p < .05) and NR-self (β = .16, p < .05) were statistically significant predictors and together they explained %8.2 of the variances in mental well-being. In the second model, NR-experience was

excluded and demographic variables were entered in the model. All of the variables contributed the model (R^2 = .13 $F_{(6;402)}$ = 12.27, p <.05), however only NR-self, time spent in nature and gender -being male- (β = .18, p<.05) were statistically significant predictors of mental well-being. Together, these variables explained almost 14% of the variances in mental well-being. Changes within R^2 between first and second model indicated a statistically significant increase in mental well-being and it means that the gender explained an additional almost 5% variances of mental well-being. These results revealed that self-relation with nature, spending time within nature and being male can significantly contribute the mental well-being indicators of college students and together these factors helped to explain almost 14% variances of mental well-being.

CHAPTER V

DISCUSSION

This study aimed to find any significant relationship between nature relatedness, time spent in nature and mental well-being among college students. The predictor role of nature on well-being of youth was examined as well as the structure of college campuses and its role in connecting to nature. This study also aimed to examine differences within nature relatedness, mental well-being, time spent in nature and SES in terms of demographic variables like gender, age, employment status, marital status and education degree. Exploring these variables can be beneficial to understand cognitive, emotional and behavioral components related to mental well-being. It can also give a better understanding about our innate needs in 21th century. In this chapter, the findings of the present study are discussed mostly by referring to previous findings which were mentioned in the literature section.

5.1. Discussion Regarding Campus Green Space Form

In the current study, campus green space form was used to reveal the college students' usage patterns of the campus greenery. It was also used to detect the time spent within campus greenery and obstacles which were faced to access the campus greenery. Before applying this form, college students were separated into two groups in terms of having green space at their campus. It was detected that almost one third of the sample (35.4%) did not have any access to green space at their campuses. The other two third of the sample did have campus greenery but even within this group a considerable amount of college students (32.6%) stated that they had a very limited and small green space in their campuses. These findings revealed that college students were not able to connect to nature in campus areas where most of their time was spent. This finding also revealed that almost 55% of the total sample did not benefit from the positive

effect of green campus structures. Majority of the findings indicated that green campus structures and natural settings within campus area have enormous positive impacts like higher quality of life, stress reduction, positive classroom outcomes, higher final grades and better attentional skills on the college student's well-being (McFarland et al., 2008; Ulrich, 1979; Benfield et al., 2015; Tennessen & Cimprich, 1995; Tiyarattanachai & Hollmann, 2016). Thus, it can be said that nearly the half of the college students in this sample had no well-being gain in terms of campus greenery.

When characteristics of this sample was considered, it can be seen that most of the participants (79.7%) were educated at Istanbul, the biggest metropolis of Turkey. There are plenty of universities which do not have a single tree in their yards and completely consisted of concrete buildings in Istanbul. Even though higher education is highly important in Turkey, culturally and economically, these non-green university structures may be explained by the rapid and unplanned urbanization within the city and massive internal migration from other Turkish cities to Istanbul which has been the case especially for last fifty years. Another reason behind this fact might be financial. Istanbul is a highly populated city which has more than 15.5 million people (2921/km^2) according to 2019 population census ("İstanbul Nüfusu", n.d., par 1). To be able to construct greener universities, large territories are needed which might cause financial difficulties for stakeholders of the universities especially within the city of Istanbul.

These non-green structures of the universities might be the number one reason for college students for not spending time in green areas or natural settings. Hence, in the current study, the average time spent in campus greenery was about 2.4 hours in a week. Employed and unemployed students, male and female students and all students from different education degrees spent similar time within campus greenery. On the contrary, the finding about group differences in the current study is not consistent with a specific study which was conducted in United Kingdom (Speake et al., 2013). In this study, researchers had found that female college students spend more time in the campus greenery compare to male students and undergraduate students were more aware of green places and spend more time in campus greenery than post graduate students. This difference can be explained with the sample characteristics of the current study which consisted of female (75.5%) and undergraduate students (76.7%)

dominantly. Another reason behind this difference with the existing literature might be the different academic difficulties that student have to deal with. Because in Turkey, both graduate and undergraduate students have to spend most of their time in studying. On the other hand, in this sample, single students spent more time in campus greenery compared to married students. This finding does correspond with another study which was employed in United States (McFarland, 2007). In this study, the researcher revealed that the married and partnered students were less likely to use campus green spaces. This situation can be explained with marriage responsibilities which includes lots of household works and child care that need a great deal of time. Hence, it can be considered as normal for married students to spend less time in campus greenery compare to single students.

Other reasons for not spending more time in campus greenery for all the groups of students were described in the form. Unfavorable weather conditions and being busy were the most common obstacles. This situation indicates that there are not adequate areas like arbors to enable the students to spend time even in hot, rainy or cold weather at campus areas. Also, it indicates that for this sample, educational duties were too heavy to have the free time to spend in campus greenery. The educational buildings being distant from campus greenery was also one of the main reasons for not spending time in campus greenery. This finding was consistent with the previous findings (Abu-Ghazzeh, 1999; Speake et al., 2013) which were stated the importance of proximity of the green spaces as well as the size of the green spaces.

Furthermore, the students in this sample stated that they would rather prefer spending time with their phones and computers and surfing on social media than hanging out within campus greenery. This can be explained with the characteristics of this sample's generation. As the mean age of the sample was considered -22.03- it can be said that majority of the sample were from I-Generation who were born in between 1995 and 2012. I-Generation is more likely to spend their time online than a real life setting (Twenge, 2018). The open ended field in the form revealed this characteristics of this young generation. Further studies need to be conducted to understand the relationship between technological tools and nature and their impacts on this young generation. Other statements about the obstacles which were faced in accessing campus green spaces were crowded campus greenery and being exposed to high ratio

of smoking students. It can be said that human density is inevitable because of the highly populated cities like Istanbul. For the smoking problem, it can be stated that it is not a problem just for college students but for the all kinds of Turkish people, as well. Turkey is the country that has one of the highest smoking ratios in the world. Among one hundred other surveyed countries it is in the tenth place. Almost 24% of Turkish people smoke every day ("Smoking in Turkey", 2020). Hence, it is very common to see Turkish college students smoking while in the campus green spaces. Ironically, smoking was the main reason for some students to avoid to use the campus green spaces whereas it was the main activity for some other students an activity to do in campus greenery.

The most common activities which were preferred to do in campus green spaces were the activities about relaxation and socialization for this sample. By taking the stress amount of college students into consideration, it is very understandable for this group to get a rest or relaxation within campus green spaces. Using campus green spaces for relaxing was consistent with the findings of some studies (Seitz et al., 2014; Lau & Yang, 2009). It can be said that college students were using these green spaces to decrease their stress level and to increase their mood instinctively. Also, although there are different discussions about it, it might be said that Turkish culture mostly exhibits a collectivistic orientation which includes emotional dependence on kinship, family, friendship and social system (Göregenli, 1997). Hence, using campus green spaces for socializing purposes in a high ratio can be considered as normal for Turkish college students. The other frequent activities -eating, reading/studying- which were done by this sample indicates that campus green space also functioned as a study hall/library and a dining hall/café. It might be said that campus green spaces comprise all different roles which have different functions within the university.

In addition, for this sample riding bicycle, or doing exercise were not commonly preferred activities to do in campus green spaces. This can be explained with the physical inadequacy within these places and unpopularity of active sports activities among these college students. Rather, these students preferred having a nice walk through campus greenery. This finding does match with an CNN article (2016) which explains an investigation about sports habits of Turkish people. According to this article, Turkish people do not exercise except walking. Also, taking care of the animals

within campus, watching scenes like sunset, listening music, taking photographs and surfing on social media through their phones were the other preferred activities for this group. All of the frequencies and types of these activities indicates that college students in this sample used green spaces for socializing, relaxing, communicating -either with a friend or with an animal- purposes most and for the physical activities that require less effort.

The gender differences about these activities were consistent with the previous findings in the literature (Speake et al., 2013). In the sample of the current study, it was found that female college students used campus green spaces for the activities of eating/lunch, relaxation and studying more than male students. On the contrary, male students used campus green spaces for walking and exercising more than female students. Interestingly, the sample from United Kingdom in the study of Speake et al. (2013) and in the current study indicated very similar results about gender differences. This result reported that gender tendencies about the preferred type of activities in campus green spaces might be instinctive and universal. Also, in the current study, both genders in almost same ratios used campus green spaces for taking care of animals within campus and for hanging out with the friends indicating that both genders reflect the Turkish-Islamic cultural origin in the same level. In Turkey, it is very common to meet with cats and dogs on the streets. For centuries, these animals have lived together with people in the villages, towns and cities across Turkey. It is important for Turkish people to create a bond with them and taking care of animals is also recommended in Islamic sayings and teachings. That is why, like other outdoor settings, it is very common to encounter cats and dogs in campus green spaces. There are even some college organizations and clubs to take care of these animals, properly. It can be said that it is difficult to imagine campus green spaces without animals in Turkey.

Another finding from the campus green space form was about watching and connecting natural elements inside the campus buildings. This item on the form tried to examine students' desire to connect to natural elements and campus green spaces when there were no external or physical obstacles. It was found that almost four in five of the college students (78.9%) chose to connect with natural elements when they had to stay inside of the campus buildings. This result does match with the findings of Lau & Yang (2009). In their study, they found that 94% of the college students preferred

to watch natural view from their window. The percentage of their study can be considered a little higher than the current study. This difference can be explained with the characteristics of the campus designs because as it was mentioned earlier even if the college students in the current study had green spaces in their campus area, a considerable amount of them stated that it was very limited and narrow. This fact might have shown itself with this slight difference. However, with a broader perspective, it can be said that both of studies indicate very high ratio about preferring and watching natural elements inside of the campus buildings. These similar results across cultures can be explained with the biophilia hypothesis which provided the theoretical basis for the current study.

The biophilia hypothesis implies that human beings have affiliated and responded with nature, innately. It also covers the idea that there is a genetic background in this affiliation and positive responsiveness to Mother Nature (Kellert & Wilson, 1993). The theoreticians of this hypothesis mentioned that human beings have innate positive (biophilic) or innate negative reactions (biophobic) about the situations which are in favor of the self -like to be close to a water source or an open area- or against it- like darkness or dangerous animals- (Kellert & Wilson, 1993). Also, there are many other studies (Wu et al., 2014; Ulrich et al., 1991; McCormick, 2017; Mitten, 2009; Moore 1981; Chang & Chen 2005) which have scientifically proved the impact of nature's presence on human well-being. Hence, in the current study, the college students innately chose to connect and chose to watch natural elements which are in favor of their well-being in such high ratio.

As a result, it can be said that a considerable amount of Turkish college students did not have any access to nature or greenery within their campus area. Even if they had adequate campus green space, the students still complained about the size and proximity of these green spaces as it was stated in the obstacles section. Thus, their weekly spend time within campus greenery was relatively low. Most of the students liked to spend their time by hanging out with their friends, taking a walk and relaxing within campus greenery. Also, majority of the college students chose to connect to natural elements in a very high ratio showing that human's innate affiliation and need to be close with nature.

5.2. Discussion Regarding Demographic Differences within Major Study Variables

In the current study, NR scores of female college students were statistically higher than male college students. According to literature examining the relationship between gender and nature relatedness, most of the researchers found similar results indicating that women are more nature related. Hence, the finding of the current study is consistent with the findings of Dean et al. (2018) whom had found that female participants indicated higher scores than male participants in Australia. The results also correspond the findings of Tam (2013) who had found that female participants were more empathic toward nature which was related to NR. Also, this finding does match with another study which was conducted with college students in Turkey. The researchers found that NR scores of female college students were significantly higher than male college students (Özgün &Özgün, 2019). However, contrary results were found in another study (Dornhoff et al., 2019). In this study, the researchers studied two different samples from two different countries; Germany and Ecuador. It was found that female participants indicated higher NR scores within German sample whereas male participants indicated higher scores in Ecuadorian sample. The researchers had examined these contrary results by pointing out cultural and geographical differences. It can be said that except the findings from Ecuador, the finding of the current study does match with the existing literature. This difference between women and men in NR scores across cultures can be explained with women's capacity about connecting and creating network with her immediate surroundings which include people, animal, material and nature. Women can build a bond with other people more easily than men. They can be more emphatic towards their environment. These situations might have shown themselves as this discrepancy in the findings of NR scores.

Also, in the current study, NR scores had indicated difference in terms of education degree. Although, there was not any significant relationship between age and NR, it was found that preparation school students and undergraduate students showed higher scores than graduate and doctorate students. This finding can be explained with the findings of Speake et al. (2013) and McFarland (2007) whom had found out that undergraduate students were more aware of campus greenery and achieved higher

scores about green usage than graduate students, respectively. Thus, being aware of campus greenery and using green spaces more might contribute undergraduate's NR scores. In addition, in the current study there was not found any statistically significant relationship between age and NR scores. This result does not correspond with the findings of Dean et al. (2018) which indicated that older people tend to have higher NR scores. Additional studies need to be conducted to understand the difference between NR scores in terms of age and education degree.

When it comes to discuss the results of well-being differences in terms of demographic variables, it was found that male college students' mental well-being scores were higher than female college students. This finding does match with the some of the findings in the existing literature. In one of the studies of OECD (2013), the difference between men and women in terms of well-being was examined, elaborately. According to this study, women have weaker well-being because of various reasons like; inequality about accessing education, having low income/salary compared to men, experiencing partner violence more and the social norms which impose the male superiority. Also, in a study which was conducted in Spain it was found that men have higher scores of well-being than women (Torres-Montiel et al., 2017). Similarly, in another study the researchers had found that married men had greater mental health than married women in Thailand (Fuller, Edwards, Vorakitphokatorn, & Sermsri, 2004). However, some of the results in the literature indicated contradictory findings. In a study which was conducted in Turkey, it was found that male college students' well-being was lower than female college students (Güler, 2009). Also, there are some other studies indicated that well-being does not vary according to gender (Eryılmaz 2010; Roothman, Kirsten & Wissing; 2003). For the current study, it can be said that male college students might have experienced higher well-being because they indicated more SES scores which can increase their quality of life. Also, male college students might have experienced more well-being because they take less responsibility about their lives and focus on their own interest in the Turkish society which impose the male superiority in many dimensions.

Other findings from the current the study revealed that employed college students reported higher mental well-being scores than unemployed college students and married college students reported higher mental well-being scores than single college

students. Although there are some studies indicated that there is no specific advantageous of being married on well-being (Shapiro & Keyes, 2008), majority of the studies pointed out that married people recorded higher well-being in their lives than unmarried people (Mikucka, 2016; Stutzer & Frey, 2006). In another study which was conducted with Norwegian college students, it was found that being married is important particularly for the well-being of female college students (Mastekaasa, 2006). Thus, as the sample characteristics of the current study is regarded, it is no surprise to detect the positive effects of being married on well-being for this sample which mainly consisted with females. In addition, like the effect of marital status, the employment status increased the mental well-being scores of this sample. Related findings (Soheila, Yunus, & Roslan, 2013; Winefield & Tiggemann ,1990) also report that there is a positive relationship between employment status and well-being. Hence, the finding of the current study can be considered consistent with the extant literature. Being engaged with something productive, feeling of usefulness and contributing one's own SES might be the reasons behind this phenomenon for the college students.

On the other hand, significant relationships between mental well-being scores in terms of age and education degree were not found in the current study. It means that different age groups and different education degree groups had similar scores on mental well-being. According to extant literature, a longitudinal study from United States (Springer, Pudrovska & Hauser, 2011) indicated that there was not any meaningful relationship between age difference and well-being as consistent with the findings of the current study. On the other side, in another study it was found that poor mental health and negative performance on academic tasks were more common among undergraduate students than graduate students (Wyatt & Oswalt, 2013). This difference with some of the findings in the literature can be explained with the specific characteristics of the sample of the current study which mainly consisted of undergraduate students. Undergraduate students might have suffered from the disturbances of the puberty and identity crisis and graduate students might have dealt with the heavy responsibilities like marriage and working in their lives. Hence, although there were different reasons behind their mental well-being scores, both of the group might have indicated similar scores on well-being. More research is needed to be done to compare the mental health and well-being of both of the groups.

Along with mental well-being and NR scores, the current study also focuses on the time spent in nature as a major study variable. Participants' average time score within nature was 4.3 hours in a week. As it was mentioned in the introduction, a single item was used to assess for measurement of the subjective meanings of participants about time spent in nature. Although there are some limitations about this assessment, the results of the present study indicated that college students' spent time in nature increased if they had campus green spaces at their universities. There was a statistical difference between time scores in terms of campus greenery. This finding can be considered as a vital information about well-being characteristics of the college students because it implies that green campus structures can increase spending time scores within nature. And, as the majority of the researches (McCormick, 2017; Nisbet, 2015; Nisbet & Zelenski, 2011) indicated, there is a positive and strong relationship between time spent in nature and human well-being. Other than spending time within nature, it was found that just being exposed to green environment and natural elements can increase the human well-being proved (Wu et al., 2014; Ulrich et al. 1991). Also, green space in school settings has various benefits like gaining confidence, promoting focus and attention, achieving better grades, reducing stress level and increasing quality of life on students (Chawla et al., 2014; Akpınar, 2016). Hence, providing green spaces in universities can increase the spent time in nature and the mental well-being of the college students.

Moreover, in the current study, it was found that there were not differences between time spent in nature scores in terms gender, employment status, marital status, education degree and age. These results indicated that males and females, married students and single students, employed and unemployed students and students from undergraduate or graduate degrees spent time in nature in similar ratios. This finding does not correspond with the findings of another study in which the researchers had found that male students spent more time in outdoor activities than female students in Canada (Piccininni, Michaelson, Janssen & Pickett, 2018). Another study from United States also pointed out that men spent more time in outdoor than women both in weekdays and in weekends (Kwok et al., 2009). According to a large survey carried out with 1000 people, the employed people who especially work in offices spend less time in outdoors than prisoners do indicating that employed people spend a very limited time in nature ("35% of Office Workers", 2018). Also, as previously

mentioned, undergraduate students were more aware of green spaces and tend to use it more than graduate students (Speake et al., 2013) and married and partnered students tended to use campus green spaces less than single students (McFarland 2007). All of these findings revealed that being male, being single, being unemployed, and being undergraduate have a high relation with spending more time in outdoors. For the current study, these findings were not correlated with the existed literature because it was assumed that majority of the students did not access any greenery and proper outdoor settings within their immediate surroundings and the sample were able to spend time in outdoor or nature in an adequate level to compare the difference.

In terms of SES scores differences within demographic variables, it was found that SES scores of male students were higher than female college students. The related literature supported the existed finding. A report from United States (Cawthorne, 2008) indicated that women were poorer than men, economically. Poverty scores were high within all different ethnic and age groups. The report concluded that female citizens were poorer than male citizens because they were less paid, more responsible for unpaid caregiving responsibilities like cleaning and child care, they were more abused sexually and physically and they were placed into low paid jobs like teaching and waitressing. Another study about gender differences within income was conducted in Brazil with medicine workers where it was reported that women earn less than men and they tended to segregated into lowest wage categories (Mainardi, Cassenote, Guilloux, Miotto & Scheffer, 2019). Male participants of the current study indicate higher scores on SES, because it was assumed that when they worked they got higher payment compared to female participants and they might also achieve more pin money from their parents. Or, maybe they just wanted to state that they had more monthly income than their actual income while completing the survey package of this study. Because culturally in Turkey, higher income for a man indicates higher masculinity. This kind of limitations could be confronted with the self-report measurements.

Other components in SES showed no difference for this sample. It means that employed and unemployed students, married and single students, undergraduate and graduate students had similar monthly incomes. These findings can be explained with the cultural norms of the Turkey. Protective parenting styles were very common in these lands. Also, strong family ties and social responsibilities towards children are

culturally promoted. It is very normal for a college student to live with her parents and to be taken care of financially by her parents. It is not very common to work during college education. Hence, unemployed college students do not represent a lower income or SES because of this intense economical support provided by the nuclear families. The same phenomena are consistent with marital status and different education degrees. The only difference detected in SES scores was about gender differences which was also explainable by the cultural norms that impose male superiority.

To sum up, it can be stated that female college students indicated higher NR scores because women can be more empathetic towards nature. On the other hand, male college students indicated higher SES and mental well-being scores which can be explained by the cultural norms within Turkey. Also, employed and married students showed higher scores in mental well-being scores corresponding the majority of the findings within the extant literature. Besides, when students have greenery in their campus area, they become more likely to spend time within nature.

5.3. Discussion Regarding Correlation Analyses of the Study

Correlation analysis within major study variables was employed to determine whether there was a statistically significant relationship between the variables or not. It was also conducted to determine the relationship between three dimensions of NR and mental well-being along with time spent in nature. As it was hypothesized, significant and positive relationship was found in between, NR and mental well-being, NR and time spent in nature, time spent in nature and mental well-being and time spent in nature and SES. However, no significant relationship between SES and mental well-being was found.

According to literature regarding NR and well-being, the finding of the current study does match with the previous findings of the extant literature. Nisbet et al., (2011) had found a strong and significant connection between NR and the dimensions of well-being like positive affect and autonomy. In another study which was conducted in Australia, the researchers had found that high nature related individuals were less likely to develop a mental illness like depression and also, they were less tend to develop negative symptoms about their physical health (Dean et al., 2018). Similarly,

Sarıçam et al. (2015) had found that high nature related college students were less likely to develop depression, stress and anxiety in Turkey. The positive impact of NR can be seen in some of the experimental studies, as well. In one study, social and psychological skills of Ugandan youth increased after nature experienced workshop (Johnson-Pynn et al., 2014) and participants' well-being and vitality increased after a weekend expedition in nature (Nisbet, 2014). Also, the results from another study (Gerofsky, 2016) made the biophilia hypothesis stronger because in that study, emotional intelligence, NR and well-being measures were strongly associated and both of NR and emotional intelligence fulfill the human innate need to relate with other life organisms, as the hypothesis suggested. A comprehensive meta-analysis research (Capaldi, et al. 2014) also indicated that NR was associated with happiness. Thus, it was proved that positive aspects of human well-being were not only come from one single study, instead it can be achieved by various different studies. The present study and related literature scientifically indicated that being more nature related leads college students to experience higher well-being indicators.

Even though, the relationship between NR and mental well-being was expected to be stronger than the current results, it should be remembered that there has not been any study which had researched the relationship between NR and mental well-being, precisely. This study can be considered as the first study in this respect. Thus, a contribution to the research field was achieved. Also, mental well-being level of the participants might have been influenced from the negative outcomes of Covid-19 pandemic in the world. In other words, the result of relationship between NR and mental well-being was consistent with the previous findings in the literature but more research needs to be conducted to find out stronger relationships between two variables.

According to literature regarding time spent in nature and mental well-being, the finding of the current study does match with the related findings. As Seitz et. al. (2014) stated nature exposure affects human well-being positively, like watching a natural scenery or walking in a garden. Some studies indicated that deprivation from nature can even cause some of the mental illnesses like ADHD (McCormick, 2017). To encourage people to spend more time in nature, a nature based program -30X30 Nature Challenge- was conducted in Canada. This program indicated the effect of time spent

in nature on human well-being. According to results, nature contact of participants increased, participants had started to spend time in active and relaxing exercises in nature more. Also, this challenge even increased the socialization skills of the participants and decreased their spent time with technological tools. Participants were more vital and they experienced greater good mood after the program (Nisbet, 2015). Another study which was employed with college students reported that walking outdoors created better positive effect than walking indoors in campus area (Nisbet & Zelenski, 2011). This study also highlighted the importance of nearby nature that people face within their daily lives. All of these studies examined that physical involvement with nature like walking, gardening, hiking or just simply watching and relaxing within nearby nature can increase human well-being.

Moreover, time spent in nature positively correlated with SES in the current study. This result pointed out that the activities like walking around beach or park, camping, fishing, nature photographing requires a specific SES level. In Turkey, especially in the city of Istanbul, public green spaces are limited. To be able to experience nature, sometimes people need to go far away from the city center and it costs money. Time is also precious for the SES of college students because either they prefer to work and study or relax in their limited spare time. This finding is also consistent with a report from United States which explained that people who have annual incomes under 25.000 dollar spend lesser time within nature than people who have annual incomes above 75.000 dollar (APM Research Lab, 2019).

As common human sense suggests, it was expected that people who show higher scores in NR are also involved in spending more time in nature. The findings of the current study supported this common sense; significant and positive relationship between NR and time spent in nature was detected. In a study which was conducted with college students in Turkey, significant and positive relationships between nature relatedness scores, frequency of being within nature and frequency of attending outdoor activities were found (Özgün & Özgün, 2019). Furthermore, some studies indicated that this relationship is reciprocal. While one's nature relatedness increase, her spent time in nature heightens. The opposite situation is also correct, spending time in nature can increase nature relatedness of the individuals (Nisbet & Zelenski, 2011; Nisbet 2015). However, the finding about this relationship in the current study was

expected to be stronger than the current results. The reason behind this relatively weak relationship might be the non-green structures of the campuses. Because of the fact that college students spend most of their time within their campus, limited green spaces or non-green campus structures might have caused them to spend less or no time within nature. Hence, their NR scores were also degraded because of this limitation. To increase the NR scores and time spent in nature, physical capacities of the universities must be regarded first.

In addition, as it was accepted as one of the major variables of this study, SES and its relation to mental well-being was checked through correlation analysis. There was not found any significant relationship between SES and mental well-being. Although this result does not match with some of the previous findings (Luo & Waite, 2005; Eryılmaz, 2010; Pinquart & Sörensen, 2000). There are also some other studies that show there is no association between SES and well-being. In one study which was conducted in China, it was found that income or SES does not advance happiness. It is only an important component to reduce negative emotions (Yu & Chen, 2016). Hence, the SES levels of the students might have contributed to them developing fewer negative emotions, and it might have not been detected within their well-being scores, in the current study. Also, the current study only tried to detect SES of the participants through a single item. The limitation of this measurement should be regarded when interpreting the current results. More studies are needed in order to detect the relationship between SES and mental well-being.

When it comes to discussing the results of the correlation analysis between the dimensions of NR and mental well-being and time spent in nature, two different analysis were conducted in this study. Partial correlation analysis indicated that the only significant relationship among the dimensions of NR scale and mental well-being scores were in between NR-self and mental well-being while controlling NR-perspective and NR-experience. This means that when a person describes herself with nature she can experience mental well-being more while controlling other dimensions. This result does also match with another study which reported that only the dimension of NR-self was significantly and positively correlated with the quality of life indicators (Fretwell & Greig, 2019). Partial analysis also reported that time spent in nature was only significantly and positively correlated with the dimension of NR-experience. It is

very understandable when the definition of the NR-experience is regarded because NR-experience represents the subjects' desire for being involved with natural world (Nisbet & Zelenski, 2014). These findings are also consistent with the findings of another study which indicated that NR-self was correlated with well-being measures and NR-experience was correlated with frequency of being in outdoors and in nature (Nisbet et al., 2009). In addition, in one study it was found that NR-experience scores of the participants were higher when they attend outdoor physical activity (Lawton et al., 2017).

On the other hand, Pearson correlation analysis between NR dimensions, time spent in nature and mental well-being indicated that NR-self, NR-experience, mental well-being and time spent in nature were correlated with each other significantly and positively. These results do correspond with the related literature which indicated that NR-self and NR-experience was significantly and positively correlated with trait emotional intelligence (Gerofsky, 2016), NR-self and NR-experience were significantly and negatively correlated with anxiety (Lawton et al., 2017) and NR-self and NR-experience were significantly and positively correlated with happiness indicators (Nisbet & Zelenski, 2014). However, in the current study significant and positive relationships between NR-perspective and well-being and also NR-perspective and time spent in nature were not found. Although there is relatively limited research regarded this subject, two different studies reported the similar findings. In the study of Nisbet and Zelenski (2014), the researchers had found that NR-self and NR-experience predict happiness and well-being more and NR-perspective does not predict well-being instead it predicts unhappiness and ill-being more. The researchers explained these unexpected results with the essence of NR-perspective. Due to the fact that NR-perspective measures one's perception about environmental attitudes and nature, it can negatively affect the well-being of people because of the ongoing environmental crisis. Too much awareness about environmental problems that are faced today, can increase the stress level of the people. Also, in another study, it was found that NR-perspective was correlated with increased stress, again unexpectedly. The researchers claimed that a growing interest in the academia is rising to investigate whether emotional distress can actually be caused by the environmental crisis. The result of the current study also indicated that NR-perspective is not a valid measure to predict well-being. That is why, NR-

perspective was excluded from the regression analysis which was conducted to predict mental well-being.

To sum up, the current and existed literature indicated that nature relatedness and time spent in nature are associated with mental well-being indicators like happiness or positive affect. NR is also associated with spending time within nature. There is a reciprocal relationship between these two. It can be also stated that to spend time within nature an adequate level of SES is needed. However, SES was not correlated with mental well-being in the current study because of the fact that SES does not promote happiness but it is an important factor to reduce negative affect. On the other hand, the partial correlational analysis indicated that NR-self was associated with mental well-being and NR-experience was associated with time spent in nature indicating that self-relation with nature increase human well-being and physical connection with nature increase the spent time in nature.

5.4. Discussion Regarding Regression Analysis of the Study

The hierarchical regression analysis was conducted to examine the predictor role of NR-self, NR-experience and time spent in nature along with demographic variables on college students' mental well-being. Even though in the first model NR-experience predicted mental well-being significantly, when NR-self and time spent in nature added into the model, its predictor role was diminished. In the second model, time spent in nature and NR-self were strongest predictors of mental well-being and together they explained almost 8% variances of mental well-being. This result implies that if a college student sees the nature as part of her identity and spends some time in outdoor or nearby nature, her mental well-being can strongly be enhanced. In the third model, marital status, employment status and gender were added into the regression equation. It was found that all these variables explained almost 14% variances of mental well-being. It was also observed that only NR-self, time spent in nature and gender were significant predictors in this analysis. Gender, in other words, being male contributed the model by adding almost 5% variances more. This result revealed that self-relation with nature, spending some time within nature and having a male gender can contribute to mental well-being indicators of college students.

Although there is relatively limited research which examine the predictor roles of these variables on well-being, similar results of the current findings were detected in these studies. In one study, it was found that NR and physical activities in outdoors together explained 5% of the somatic anxiety. The researchers also found that NR-experience, physical activities which were held in outdoors, and autonomy as an indicator of the well-being predicted somatic anxiety, negatively (Lawton et al., 2017). In another study, a reverse model was conducted in regression analysis and the researchers found that self-transcendence as an indicator well-being, being male and time spent in nature explained almost 24% variances of nature relatedness in Ecuadorian students (Dornhoff et al., 2019). These studies reported that the relationship between well-being and NR is reciprocal. They both have predicting roles about each other. In another study, hierarchical analysis indicated that NR strongly predicted different well-being measures like autonomy, personal growth and self-acceptance after controlling all other related environmental measures (Nisbet et al., 2011). Also, Nisbet and Zelenski (2014) reported that NR is an important predictor of happiness among other nature connectedness variables.

To sum up, the present study indicated that NR and time spent in nature significantly predict the mental well-being of college students. To discuss the findings elaborately, the local characteristics must be regarded, first. Because as mentioned in the literature section, the cultural, philosophical and spiritual aspects about nature within these lands are highly important. Turkish people care about nature a lot, they were mostly outdoor-oriented because of their nomadic hereditary. And, the religion of Islam also highlighted the importance of nature with its revelation, Quran and the sayings of Prophet Muhammad (peace be upon with him). However, due to various reasons like; global environmental problems, rapid and unplanned urbanization, separation from rural areas and the domination of westernization viewpoint about nature made Turkish people less connected with nature. Also, given the fact a very high majority of the sample was educated in İstanbul which is a highly populated metropolis, most of the students in this research do not even have any green spaces at their university campuses. To achieve stronger results between variables, green campus structures must be created for the students. It was assumed that, like a domino effect, because of these non-green structures of the universities, students were not able to spend time in nature, adequately. Thus, their NR scores were not very high. And this situation leads

them not to have higher scores of mental well-being. Instead, their concern about the environment (NR-perspective) might have contributed to them feeling distressed about the lack of green spaces and sustainability problems within their campus areas. Green spaces are also vital for college students because as this study reported, they have many different functions -socialization, exercising, studying- for college students' lives. Besides, college students wanted to connect with natural elements more because they innately knew that nature connection is beneficial for them. This desire of connection was very valuable for the students. It is even more valuable than having higher income or SES. Because in the current study, higher SES did not associate with higher well-being instead well-being was significantly associated with relation with nature. This fact presented that nature connection is one step forward than having economical resources even in today's materialistic world. The current study also presented some important underlying mechanisms of human well-being and it highlighted the importance of connection with nature on happiness especially for the societies' future building blocks, college students.

5.5. Implications for Theory and Practices

There are many different implications which were concluded from the findings of this thesis study for psychological counselors, architects, university administers, researchers and educators. First, although there are few studies about nature relatedness and subjective, psychological and personal well-being and there are very limited studies about use of campus green space and quality of life, there is no published study which examine the predictor role of nature relatedness and time spent in nature on mental well-being of college students along with the use of campus green space together. By combining these important variables in one single study, a contribution to literature was achieved. Thus, the results of this study might give valid perspectives to researchers and theoreticians.

Second, as mentioned earlier, there was not any research study in Turkey regarding the relationship between nature relatedness and well-being. It can be said that there is a gap in Turkish literature which explains the element of mental well-being in relation with nature relatedness and time spent in nature as well as use of campus green space.

Hence, this study contributed this limited research field in Turkey by examining the local data.

Third, due to the short history about the relationship between nature relatedness and well-being in academics, the present study indicated that deeply enlightening this relationship is valuable. Understanding the underlying mechanisms of human well-being might be beneficial for future interventions which aim to enhance happiness and restore urban living.

Fourth, this study highlighted the importance of nature connection for mental well-being. Counselors and psychotherapists must consider that the element of well-being vary with respect to spending time in nature and nature relatedness. They can enhance their clients' well-being by including natural elements into counseling sessions. They can arrange and design their offices like including indoor plants and hanging photographs depicting nature to the walls to acquire the proved benefit from natural elements (Ulrich et al., 1991; Moore, 1981; Chang & Chen, 2005). They can also be freed from the indoor office structure and can have sessions in gardens, parks, seaside while still regarding counseling rules.

Fifth, the present study also proved that nature connection and having green campus structure are vital for the college students. University administers, architects who are responsible for constructing universities, ministry of education and educators should keep in mind the positive effect of green spaces on students' well-being, academic success and happiness (Tiyarattanachai & Hollmann, 2016; Tennessen & Cimprich, 1995; Benfield et al., 2015). By creating greenery in school systems, not only benefits which are achieved from being exposed to nature but also an increase in spending time in nature can be attained. Mental and physical health benefits for the students can be acquired with these renovations.

In conclusion, the results of the present study might encourage the educators, counselors and administers to redesign the campus structures, to include greenery and natural elements into lives of the college students who experience high amount of stress and pressure. The results might also lead counselors and psychotherapist to get

benefit from nature relatedness and time spent in nature as a beneficial tool to enhance mental well-being and they can make a difference in students' lives.

5.6. Recommendations for Future Research

Previous studies indicated that NR was associated with well-being indicators more than ill-being features (Nisbet & Zelenski, 2014). Thus, further studies regarding NR should not be focused on the problematic parts of human psychology like depression or anxiety but should focus on the dimensions of positive psychology like well-being or resiliency. It was assumed that if studies focus on the positive psychology which aims to reveal strong and positive part of human conditions, people might benefit from nature connection in a more enhanced way.

Even though, the present study indicated valid findings which are consistent with the related literature, this study has some limitations. These limitations are needed to be taken into consideration as a guideline when organizing future research. The cross-sectional design of the study might have influenced the results of the findings because the measurements were applied to students at point in time and well-being of the students can show differences within time. As stated earlier, the well-being of the participants can be affected by some internal and external factors such as the social isolation process that we are faced today because of Covid-19 outbreak. Although the chosen time for conducting the surveys had started before the outbreak in Turkey, its negative impact might still affect the scores of mental well-being. That is why, further research must needs to regard the features of the chosen time.

Besides, the correlational nature of the study limits the determination of the causal relationships between the variables. Longitudinal designs can be created to determine the effect of NR on well-being through different times. Also, it would be very helpful to obtain the qualitative experiences of participants. Ethnographic design or narrative design can be used to capture the personal experiences and perceptions of sampling and detect the nature's effect on students' lives. Also, mixed method research can be used and with this way both of the quantitative and qualitative results extinguish the limitations and give deeper results about these variables.

About the participants, it can be said that larger sample can be selected for further research to achieve more representative data and generalizable results. Different structured campus environments can be selected as well to compare their effects on NR and well-being. Also, the universities are used as the sites of much research for feasible causes but as researchers we should go beyond the universities and explore more diverse groups in our sampling.

Moreover, this research can be repeated with children in the future so it may contribute to understand the effects of urbanization and nature relatedness on their mental well-being level. In this way, the results may change the physical structures of schools. More nature related architecture can be used in designing schools and a nature-oriented curriculum can be used.

About the measurements of the study, it can be recommended to include different well-being measures like psychological well-being and subjective well-being for further research to attain the impact of NR on different well-being indicators. Stress and depression scales can also be used to detect the relationship between stress and environmental concern which was captured in NR-perspective dimension. It should be kept in mind that NR is a relatively new concept and more research needs to be conducted to enlighten its impact on human lives.. Also, the relationship between academic success and green campus environment can be included in the further research. In order to detect the SES and time spent in nature deeply different measures can be used, as well.

Overall, it is very important to consider the natural elements and nearby nature in today's machine regulated world. People and generations are drifting apart from what is 'natural' day by day. It is very crucial to restore our relationships with nature and all living organisms to be able to live healthy and to enhance our well-being.

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APPENDICES

APPENDIX A: Informed Consent Form

Bilgilendirilmiş Gönüllü Onam Formu

Sizi Zeynep Doğru tarafından yürütülen "Üniversite öğrencilerinin zihinsel iyi oluş düzeylerinde doğa ile ilişkide olmanın etkisi" başlıklı araştırmaya davet ediyoruz. Bu araştırmanın amacı doğayla ilişkide olma ile zihinsel iyi oluş arasındaki ilişkinin incelenmesidir. Bu kapsamda sizden yaklaşık 10 dakikanızı ayıracağınız iki ayrı ölçek ve kişisel bilgilerinizi anonim olarak girebileceğiniz bir demografik form doldurmanız istenmektedir.

Araştırmanın amacına ulaşması için sizden beklenen yalnızca size en uygun gelen cevapları içtenlikle vermeniz ve eksiksiz şekilde soruları yanıtlamanızdır. Araştırmaya katılım tamamen gönüllülük esasına dayanmaktadır. Bu formu okuyup onaylamanız, araştırmaya katılmayı kabul ettiğiniz anlamına gelmekle birlikte araştırmaya katılmama veya katıldıktan sonra istediğiniz zaman araştırmayı bırakma hakkına da sahipsiniz.

Bu çalışmadan elde edilecek bilgiler tamamen araştırma amaçlı kullanılacak olup kişisel bilgileriniz gizli kalacaktır ve araştırma dışında kimse görmeyecektir.. Eğer araştırma hakkında daha fazla bilgiye ihtiyaç duyarsanız zeynep.kara@ibnhaldun.edu.tr adresine mail atarak iletişime geçebilirsiniz.

Yukarıda yer alan ve araştırmadan önce katılımcıya verilmesi gereken bilgileri okudum ve katılmam istenen çalışmanın kapsamını ve amacını, gönüllü olarak üzerime düşen sorumlulukları anladım. Bu koşullarda söz konusu araştırmaya kendi isteğimle katılmayı kabul ediyorum.

Evet ○

Hayır ○

APPENDIX B: Socio-Demographic Form

Kişisel Bilgiler

1. Cinsiyetiniz: *

- ◯ Erkek
- ◯ Kadın

2. Kaç yaşındasınız? *

_____ yaşındayım.

3. Eğitim düzeyiniz/döneminiz: *

- ◯ Hazırlık
- ◯ Lisans
- ◯ Yüksek Lisans
- ◯ Doktora

4. Medeni haliniz: *

- ◯ Bekar
- ◯ Evli

5. Yüksek öğreniminizi hangi şehirde gerçekleştiriyorsunuz? *

Şehir seçiniz

6. Öğrenciliğinizin yanısıra herhangi bir işte düzenli olarak (kısmi ya da tam zamanlı) çalışıyor musunuz? *

- ◯ Evet
- ◯ Hayır

Genel Bilgiler

1. **Temel yaşam giderleriniz (mutfak masrafı, barınma masrafı, ulaşım ve sağlık giderleri vb.) haricinde ayda kaç liralık bir bütçenizi arzu ettiğiniz aktiviteleri (sosyal aktiviteler, gezi, sinema, tiyatro, elektronik eşya alışverişi, kozmetik alışveriş vb.) yapmak doğrultusunda ayırırsınız? ***

   (100 TL, 450 TL vb.)

   _____ TL

2. **Bir haftada okul/iş zamanları dışında doğada/dışarıda doğa aktiviteleri yaparak (parkta, sahilde, ormanda yürüyüş, sokak hayvanlarıyla ilgilenme, bisiklet sürme, paten sürme, doğa fotoğrafçılığı, kelebek/kuş gözlemi, balık tutma, kamp yapma, gökyüzünü gözlemleme, piknik yapma vb.) kaç saat vakit geçirirsiniz? ***

   (Örn; 1 saat, 0 saat, 7 saat)

   _____ saat geçiririm.

3. **Kampüsünüzde açık alan/yeşil alan (park, bahçe, meydan, havuz, göl kenarı, deniz kenarı, orman, koru vb.) var mı? ***

   ○ Evet

   ○ Hayır

APPENDIX C: Use of Campus Green Space Form

Kampüs Kullanımı

1. **Haftada kaç saat kampüsünüzde yer alan açık mekanlarda ve/veya yeşil alanlarda vakit geçirirsiniz? ***

   _____ saat vakit geçiririm.

2. **Kampüsümdeki yeşil/açık alanda aşağıdakileri yaparım: ***

   *Birden fazla seçeneği işaretleyebilirsiniz.

   - [ ] Derslerime mola vermek, dinlenmek
   - [ ] Gezmek, dolaşmak
   - [ ] Bisiklet sürmek
   - [ ] Bir şeyler yemek-içmek
   - [ ] Arkadaşlarımla vakit geçirmek
   - [ ] Ders çalışmak, kitap okumak
   - [ ] Egzersiz yapmak
   - [ ] Kampüsümde bulunan hayvanlarla ilgilenmek, bakım vermek
   - [ ] Diğer (Lütfen belirtiniz) _____

3. **Kampüsünüzdeki yeşil/açık alanda vakit geçirmekten sizi ne alıkoyar? ***

   *Birden fazla seçeneği işaretleyebilirsiniz.

   - [ ] Yoğun olmak, vakit bulamamak
   - [ ] Olumsuz hava koşulları (aşırı sıcak, soğuk veya yağmurlu olması)
   - [ ] Eğitim gördüğüm binalardan uzak olması
   - [ ] Bu alanlarda bulunan hayvan ve böcek benzeri unsurlardan çekiniyor olmam
   - [ ] İlgimi çekmemesi
   - [ ] Oldukça sınırlı, küçük bir yeşil alan bulunması
   - [ ] Diğer (Lütfen belirtiniz) _____

4. **Dışarı çıkmanın yanı sıra kampüs binaları içerisinde kalıp doğayı, manzarayı (gökyüzünü, ağaçları vb.) içeriden/pencerelerden izler misiniz? ***

   - ( ) Evet
   - ( ) Hayır

APPENDIX D: Turkish Version of Nature Relatedness Scale (NR-21)

DİO-21

1. Lütfen aşağıda verilen her bir ifadeye katılım durumunuzu gösteren seçeneklerden birini işaretleyiniz. *

1: Kesinlikle Katılmıyorum
2: Katılmıyorum
3: Kararsızım
4: Katılıyorum
5: Kesinlikle Katılıyorum

	1	2	3	4	5
Kötü havada bile dışarıda olmayı severim.	○	○	○	○	○
Bazı türlerin nesli devam etmese de olur.	○	○	○	○	○
İnsanların doğal kaynakları istedikleri gibi kullanma hakları vardır.	○	○	○	○	○
İdeal tatil yerim uzak, el değmemiş bir doğa alanıdır.	○	○	○	○	○
Davranışlarımın çevreyi nasıl etkilediğini düşünürüm.	○	○	○	○	○
Toprakla uğraşmaktan ve ellerimi kirletmekten hoşlanırım.	○	○	○	○	○
Doğaya ve çevreye bağlılığım ruhumun bir parçasıdır.	○	○	○	○	○
Çevre sorunlarının farkındayım.	○	○	○	○	○
Nerede olursam olayım yabani hayat ilgimi çeker.	○	○	○	○	○
Doğal alanlara sık gitmem.	○	○	○	○	○
Çevre konusunda ne yaparsam yapayım dünyanın öteki yerlerindeki problemlere çözüm olmayacaktır.	○	○	○	○	○
Kendimi doğanın bir parçası olarak görüyorum.	○	○	○	○	○
Medeniyetten uzak, ormanın derinliklerinde olma düşüncesi beni korkutur.	○	○	○	○	○
Doğa ile ilgili hislerim yaşam tarzımı etkilemez.	○	○	○	○	○
Hayvanlar ve bitkiler, insanlardan daha az haklara sahip olmalıdır.	○	○	○	○	○
Şehrin ortasında bile etrafımdaki doğayı fark ederim.	○	○	○	○	○
Doğa ile ilişkim benliğimin önemli bir parçasıdır.	○	○	○	○	○
Doğayı koruma çalışmaları gereksizdir, çünkü doğa insanların yol açtığı sorunlara karşı kendini yenileyecek kadar güçlüdür.	○	○	○	○	○
İnsan dışındaki canlıların durumu, insanoğlunun geleceğinin bir göstergesidir.	○	○	○	○	○
Hayvanların çektiği acıları umursarım.	○	○	○	○	○
Dünyaya ve canlıların tümüne oldukça bağlıyım.	○	○	○	○	○

APPENDIX E: Turkish Version of Warwick-Edinburgh Mental Well-Being Scale

WEMİOÖ

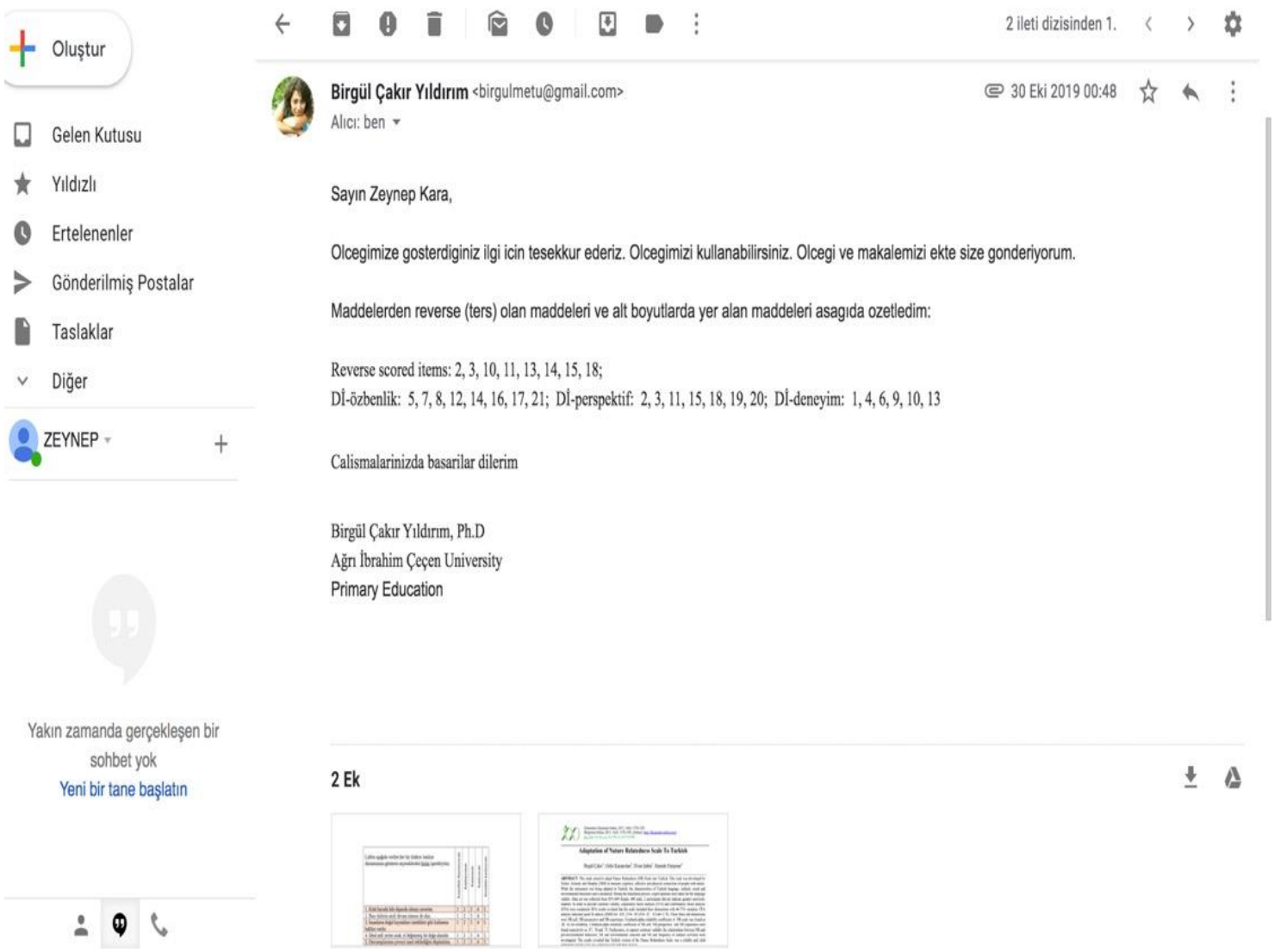
1. Lütfen son iki haftayı düşünerek her bir deneyiminizi en iyi tanımlayan kutuyu işaretleyin (√). *

1: Hiçbir zaman
2: Nadiren
3: Bazen
4: Sık sık
5: Her zaman

	1	2	3	4	5
Gelecekle ilgili iyimserim.	◯	◯	◯	◯	◯
Kendimi işe yarar (faydalı) hissediyorum.	◯	◯	◯	◯	◯
Kendimi rahatlamış hissediyorum.	◯	◯	◯	◯	◯
Diğer insanlara karşı ilgiliyim.	◯	◯	◯	◯	◯
Farklı işlere zaman ayırabilecek enerjim var.	◯	◯	◯	◯	◯
Sorunlarla iyi bir şekilde başa çıkabilirim.	◯	◯	◯	◯	◯
Açık ve net bir biçimde düşünebiliyorum.	◯	◯	◯	◯	◯
Kendimden memnunum.	◯	◯	◯	◯	◯
Kendimi diğer insanlara yakın hissediyorum.	◯	◯	◯	◯	◯
Kendime güveniyorum.	◯	◯	◯	◯	◯
Kendi kararlarımı kendim verebiliyorum.	◯	◯	◯	◯	◯
Sevildiğimi hissediyorum.	◯	◯	◯	◯	◯
Yeni şeylere karşı ilgiliyim.	◯	◯	◯	◯	◯
Neşeli hissediyorum.	◯	◯	◯	◯	◯

APPENDIX F: Written Permissions for the Study Scales

1-Written Permission for Nature Relatedness Scale (NR-21)



2-Written Permission for Warwick-Edinburgh Mental Well Being Scale (WEMWBS)

gokaykeldal@yandex.com <gokaykeldal@yandex.com> 29 Ekim Sal 23:21

Alıcı: ben

Zeynep hanım ölçeği kullanabilirsiniz. İyi çalışmalar.

--

Yandex.Mail mobil uygulamasından gönderildi

17:57, 29 Ekim 2019, ZEYNEP KARA <zeynep.kara@ibnhaldun.edu.tr>:

> Merhaba,
>
> İsmim Zeynep Kara Doğru. Boğaziçi Üniversitesi psikolojik danışmanlık ve rehberlik bölümü mezunuyum. Şuanda ise İbn-i Haldun Üniversitesi'nde yine PDR alanında yüksek lisans yapıyorum. Aynı zamanda, İstanbul Üniversitesi Açık ve Uzaktan Eğitim Fakültesi'nde Coğrafya bölümünü okuyorum. Bu sene tez dönemindeyim. Lisans eğitiminden beri en çok araştırmak istediğim konu doğanın, doğayla ilişkide olmanın insanı mental, duygusal ve psikolojik açıdan ne ölçüde etkilediği oldu. Doğa ile ilişkide olmanın mental iyi oluş üzerine yordayıcı bir etkisi olup olmadığını araştırmak istiyorum. Tezimle ilgili diğer ölçekleri Türkçe'ye uyarlayan kişilerden talep ettim ve erişim sağladım. Warwick-Edinburgh Mental İyi Oluş Ölçeğini de tez çalışmamda kullanmak istiyorum. İnternette yayınlanmış olan, ölçeğin geçerlilik ve güvenirlilik çalışması ile ilgili yazmış olduğunuz makaleden de oldukça faydalandım. Makalenin sonunda ölçeğin kendisini paylaşmışsınız ancak ben yine de ölçeği kullanmak için sizin onayınızı ve izninizi almak istiyorum. Danışmanım ve hocalarım da bu konuda oldukça hassas. Türkçeye uyarlamış olduğunuz ölçeği tez çalışmamda kullanmama izin verirseniz çok müteşekkir olurum.
> iyi akşamlar

Fikrî Bağımsızlık | Intellectual Independence | الاستقلال الفكري

İBN HALDUN ÜNİVERSİTESİ

APPENDIX G: Written Permission from the Ethical Committee of Ibn Haldun University

T.C.

İBN HALDUN ÜNİVERSİTESİ

SOSYAL VE BEŞERI BILIMLER BILIMSEL ARAŞTIRMALAR VE YAYIN ETIĞI KURULU BAŞKANLIĞI KARAR FORMU

BAŞVURU BİLGİLERİ	ARAŞTIRMANIN AÇIK ADI	Üniversite Öğrencilerinin Zihinsel İyi Oluş Düzeylerinde Doğa ile İlişkide Olmanın Etkisi			
	KOORDİNATÖR/SORUMLU ARAŞTIRMACI UNVANI/ADI/SOYADI	Rehberlik ve Psikolojik Danışmanlık Bölümü Yüksek Lisans Öğrencisi/ Zeynep Doğru			
	KOORDİNATÖR/SORUMLU ARAŞTIRMACININ UZMANLIK ALANI	Rehberlik ve Psikolojik Danışmanlık			
	KOORDİNATÖR/SORUMLU ARAŞTIRMACININ BULUNDUĞU MERKEZ	İstanbul			
	ARAŞTIRMAYA KATILAN MERKEZLER	TEK MERKEZ ☐	ÇOK MERKEZLİ ☐	ULUSAL ☒	ULUSLARARASI ☐

	Belge Adı	Tarihi	Versiyon Numarası	Dili
Değerlendirilen Belgeler	ETİK KURUL BAŞVURU FORMU	11.12.2019		Türkçe☒ İngilizce☐ Diğer☐
	BİLGİLENDİRİLMİŞ GÖNÜLLÜ OLUR FORMU	11.12.2019		Türkçe ☒ İngilizce ☐ Diğer ☐
	SOSYODEMOGRAFİK FORM	11.12.2019		Türkçe ☒ İngilizce ☐ Diğer ☐
	KARAR NO: 2019/25-2	TARİH: 11.12.2019		
Karar Bilgileri	**KARAR:** Kurulumuza başvuran **Sn. Zeynep Doğru - "Üniversite Öğrencilerinin Zihinsel İyi Oluş Düzeylerinde Doğa ile İlişkide Olmanın Etkisi"** isimli proje; amaç, araştırma türü ve örneklem, veri toplama araçları, süreç ve işlemler, veri analizleri dikkate alınmak suretiyle değerlendirilerek aşağıdaki sonuca ulaşılmıştır: **Proje etik açıdan uygun bulunmuştur** ☒ **Projenin etik açıdan geliştirilmesi gerekmektedir** ☐ **Proje etik açıdan uygun bulunmamıştır** ☐			

ETİK KURULDAKİ GÖREVİ	ADI SOYADI	İMZA
Etik Kurul Başkanı	Prof. Dr. Ali Yeşilırmak	
Üye	Prof. Dr. Yüksel Özden	
Üye	Prof. Dr. Fuat Erdal	
Üye	Prof. Dr. Halil Berktay	
Üye	Prof. Dr. Bilal Aybakan	
Üye	Prof. Dr. Yusuf Çalışkan	
Üye	Prof. Dr. Üzeyir Ok	

ASLI GİBİDİR

...../...../20....

CURRICULUM VITAE

Personal Information:

Name-Surname: Zeynep Doğru

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E-mail (2): zeynep.dogru.nz@gmail.com

Education:

2010-2016 BA in Guidance and Psychological Counseling, Bogazici University, Turkey

2012- (still) BA in Geography, Istanbul University, Turkey

2017-2020 MA in Counseling Psychology, Ibn Haldun University, Turkey

Work Experience:

2016 – 2018 Psychological Counselor, Çınar Primary School, Istanbul

2018- 2019 Teaching Assistant, Ibn Haldun University, Istanbul

2019-2020 Psychological Counselor, Research and Counseling Center of Ibn Haldun University, Istanbul