The Protective Effects of Natural Environment on Childhood Resilience

Dissertation submitted to The University of Kerala in partial fulfilment of the requirement for the award of the Degree of

Master of Science in Counselling Psychology

By

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CERTIFICATE

This is to certify that the Dissertation entitled “The Protective Effects of Natural Environment on Childhood Resilience” is an authentic work carried out by Adheena K, Reg No. 60423115001 under the guidance of Ms Athmaja Panickar during the fourth semester of M.Sc. Counselling Psychology programme in the academic year 2023-2025.

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DECLARATION

I, Adheena K, do hereby declare that the dissertation titled “The Protective Effects of Natural Environment on Childhood Resilience” submitted to the Department of Counselling Psychology, Loyola College of Social Sciences (Autonomous), Sreekariyam, under the supervision of Ms. Athmaja Panickar, Assistant professor (On Contract) in the Department of Counselling Psychology, for the award of the degree of Master of Science in Counselling Psychology, is a Bonafide work carried out by me and no part thereof has been submitted for the award of any other degree in any University.

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Abstract

This study assesses the protective role of natural environments in fostering resilience among children aged 10 to 12 years in Thiruvananthapuram, Kerala. Grounded in Attention Restoration Theory, the research explores how exposure to nature supports psychological well-being and adaptive functioning in late childhood. Utilizing a quantitative design, data were collected from 334 upper primary school students using the Child and Youth Resilience Measure–Revised (CYRM-R) and the Nature Exposure Scale–II (NES-II). The study examined the relationships between overall nature exposure and childhood resilience, including its personal and caregiver-related dimensions. It also evaluated specific types of nature exposure everyday interaction, excursions, and physical activity and explored gender-based differences. Findings revealed significant correlations between exposure to natural environments and both overall and domain-specific resilience. Nature exposure during physical activity emerged as particularly influential. These results highlight the natural environment as a vital ecological asset that supports children's coping capacity, emotional regulation, and adaptive functioning. The study underscores the potential of nature-based interventions in educational, therapeutic, and urban planning contexts, advocating for integrative policies that promote equitable access to green spaces to enhance childhood development and resilience.

Keywords: natural environment, childhood resilience, late childhood

CHAPTER I

INTRODUCTION

The Protective Effects of Natural Environment on Childhood Resilience

In the 1970s, a core group of developmental scientists began to study children who succeeded in life despite severe challenges. These children who triumphed in the face of adversity were referred to as "resilient," and their stories captivated the interests of clinicians, researchers, and laypeople (Lopez, Pedrotti, & Snyder, 2014).

Perhaps the most parsimonious definition of resilience is "bouncing back." The following comments on resilience from Masten, Cutuli, Herbers, and Reed (2009) illustrate this positive process. Specifically, resilience refers to "A class of phenomena characterized by patterns of positive adaptation in the context of significant adversity or risk. Resilience is an inferential concept, in that two major judgments must be rendered to diagnose resilience. First, there is a judgment that individuals are at least "doing OK" with respect to a set of expectations for behavior. Second, there must be significant exposure to risk or adversity that has posed a serious threat to good outcomes. Thus, the study of resilience phenomena requires that investigators define (a) the criteria or method for identifying positive adaptation or development, and (b) the past or current presence of conditions that threaten to disrupt positive adaptation or harm development" (p. 118) (Lopez, Pedrotti, & Snyder, 2014).

Jackson, by all accounts, was charming from birth. His giggles made people laugh. People were naturally drawn to him. And he seemed comfortable with and trusting of all family and friends. When he entered school, he thrived socially and academically. He seemed to be growing up healthy and strong. Unfortunately, when Jackson was 8 years old, a family member sexually abused him. Jackson quickly learned to protect himself from the perpetrator, and the abuse was limited to one incident. The effects of the abuse, however, were significant. Jackson's trust in people became shaky. Within weeks of the abuse, he became withdrawn, severely anxious, and

developed constant stomach pains and headaches. His psychological and physical problems led to school absences and poor academic performance. Once a confident child with an eye toward the future, he now seemed scared, and the look in his eyes suggested that he was lost in the past. In time, some caring adults in Jackson's life realized that he was struggling. The teachers at his small school realized that he was not the child he used to be. Two of these teachers reached out, one saying, "We don't know what is bothering you, but whatever it is, we are here to help you." Although he would not talk about the abuse incident until 20 years later, Jackson was able to get the support he needed from his teachers. He showed up at school a little early each morning and sat quietly in one teacher's class. Not much talking took place, but the quiet smiles they shared communicated volumes. The two elementary teachers gave Jackson a safe place to sit and heal. The quiet support helped him to let go of his fears. Over time, he began to interact more comfortably with adults. Within a year, his anxiety had subsided and his grades had improved. He returned to his old, charming ways and built a large circle of friends and mentors throughout his youth. Today, he is happily married and employed in a job he loves. Jackson, as is the case with many other resilient children, is a survivor (Lopez, Pedrotti, & Snyder, 2014).

"I am like a phoenix rising from the ashes'' is a phrase or quote that people use to indicate their ability to encounter a difficult circumstance and emerge from it. It is symbolic of their perseverance or resilience, but can we say the same thing in the context of a child? Children go through many challenges, including shifting to another city, changing schools, studying for exams, a loved one's demise, etc. Therefore, resilience building is necessary as it helps children adjust to everyday challenges and learn basic skills which prove to be useful later in their adolescence and adulthood (Blog, 2023). Resilient children can recover from setbacks and get back to living their lives more quickly. When children overcome setbacks and problems, it builds their confidence and

helps them feel more capable the next time a problem comes up. And when things do not go well and children feel anxious, sad, disappointed, afraid, or frustrated, resilience helps them understand that these uncomfortable emotions usually do not last forever. Resilient children can experience these emotions and know they will be OK before too long. Resilient children are less likely to avoid problems or deal with them in unhealthy ways, like getting defensive or aggressive. Children's resilience can go up and down at different times. And children might be better at bouncing back from some challenges than others. Children build resilience when they have: strong, supportive relationships with you, other family members and their community, emotional and practical skills that help them respond well to challenges, and helpful thinking habits and attitudes ("Building resilience in children: 3-8 years," 2025).

In the vibrant tapestry of India, where the laughter of children mingles with the bustling streets, a sobering reality persists beneath the surface. The issue of poverty and the resulting lack of basic necessities is a pressing concern that casts a long shadow over the lives of countless children in India. India's economic landscape is marked by stark contrasts, with opulence and destitution existing side by side. Economic disparities are often acutely felt by children, who bear the brunt of these inequalities. Limited access to quality education, healthcare, and nutrition disproportionately affects the most vulnerable. Children born into impoverished families often find their aspirations stifled, their opportunities limited, and their potential hindered by circumstances beyond their control. The cycle of poverty can be difficult to break, perpetuating a pattern that impacts not only the present but also the future generations. This ongoing struggle against poverty and deprivation can hinder the development of emotional strength and problem-solving skills in the most important elements of resilience. When children are exposed to overwhelming difficulties without support or positive reinforcement, their ability to adapt, hope and deterrence will be

significantly weakened. For many children in India, something as fundamental as access to clean water and proper sanitation is a luxury. Lack of access to clean drinking water and proper sanitation facilities poses significant health risks, making children more susceptible to waterborne diseases and infections. The burden of fetching water or managing sanitation falls disproportionately on young shoulders, often forcing them to compromise their education and playtime. The dire consequences of inadequate water and sanitation facilities on the physical and emotional well-being of children in India cannot be overstated. The lack of hygiene and dignity associated with poor hygiene conditions undermines children's sense of security and self-esteem. Both are extremely important to promote resilient attitudes. Persistent health risks can also lead to chronic stress, making it even more difficult for children to recover from adversity. Malnutrition is a silent crisis that affects millions of children in India. Despite the nation's agricultural bounty, a significant portion of its young population grapples with undernutrition. Malnourished children are not only physically weakened but also suffer cognitive impairments that hinder their learning abilities and future potential. The lack of proper nutrition robs children of the chance to lead healthy, productive lives, perpetuating a cycle of poverty and limited opportunities. Power nutrition also affects the development of brain and emotional regulation, which are essential for the development of tolerance. Physically vulnerable children are more likely to experience frustration, helplessness, and low motivation, making it difficult to develop adaptive coping mechanisms. In the kaleidoscope of challenges faced by children in India, the struggle for quality education stands as a central obstacle that hampers their growth and potential. Education is often heralded as the key to unlocking doors of opportunity, but for many children in India, those doors remain frustratingly shut. The educational landscape in India is a complex tapestry woven with disparities. While urban centers may offer relatively better educational infrastructure, the scenario shifts drastically in rural

areas, where inadequate facilities, lack of qualified teachers, and limited resources leave children struggling to access quality education. The gap widens further when we consider marginalized communities and tribal regions, where educational opportunities are sparse and often out of reach. These disparities perpetuate cycles of inequality, leaving countless children in India unable to tap into their full potential. When children are denied education, they lose out on exposure to positive adult role models, socialization, and intellectual stimulation—each of which are proven to strengthen psychological resilience. The lack of structure and hope in such environments can leave them feeling powerless. Child labour remains a stark reality in India, snatching away the precious years of childhood that should be spent in classrooms. The need for immediate economic support often compels children from impoverished backgrounds to forgo education in Favor of contributing to their family's income. This not only denies them the right to learn but also subjects them to hazardous and exploitative conditions. The emotional compliment of child labour removes the development room needed to promote self-efficacy and autonomy of both key elements of resilience. The stress and exploitation associated with constant work promotes fear rather than confidence, and significantly impairs the inner power of a child. Gender inequality casts a long shadow over the educational landscape in India. Discriminatory practices often result in girls receiving less access to education compared to their male counterparts. Deep-rooted cultural norms, early marriages, and expectations of household responsibilities often force girls to abandon their education prematurely. Inequality between men and women improves emotional neglect, limits social support, and reduces the chances of having to assert the girl about her life. Without a voice or encouragement, resilience withers under cultural and familial pressures. Children in India confront a multitude of health challenges that can have lasting impacts on their lives. Malnutrition, infectious diseases, and lack of proper immunization stand as persistent hurdles. Poor sanitation

and limited access to clean water contribute to the spread of diseases, while inadequate nutrition affects physical and cognitive development. Frequent illness and weakened cognitive function disrupt the development of emotional regulation and confidence in managing life's challenges. When children consistently feel unwell or fall behind developmentally, their capacity to cope with stress is diminished. While India's healthcare system has made strides, the divide between urban and rural areas, as well as the disparity in healthcare quality, remains a significant barrier. Many children in rural and remote regions lack access to even basic healthcare services, leaving them vulnerable to preventable diseases and ailments. The financial burden of healthcare often forces families to make difficult choices, with dire consequences for children's health. Without timely medical care, children can internalize helplessness, which is one of the most significant inhibitors of resilience. Ill health, combined with neglect or inadequate support, fosters a sense of futility rather than perseverance. A hidden population of vulnerable young souls struggles to survive - the street children. These children find themselves navigating the harsh realities of city life without the protection of a home or the care of their families. Street children represent a marginalized segment of society, often invisible to the mainstream. Forced into the streets due to poverty, family disintegration, or other circumstances, they confront an existence riddled with uncertainty, exploitation, and neglect. Devoid of basic necessities, they endure the struggles of finding food, shelter, and protection. These children are exposed to a range of dangers, from exploitation to substance abuse, compromising their physical and emotional well-being. This persistent insecurity erodes their sense of safety and attachment—two fundamental psychological needs for building resilience. Without these anchors, children are less likely to develop trust, hope, and long-term coping strategies. The urban environment poses unique challenges for street children. The absence of a permanent shelter exposes them to harsh weather conditions, disease, and violence. They are

often targets for exploitation, forced into begging, child labour, or even involvement in criminal activities. The lack of education further marginalizes their prospects for a better life, perpetuating a cycle of poverty and vulnerability. The cities, which hold the promise of opportunities, become a labyrinth of challenges for street children, where survival becomes a daily struggle. Isolation from formal systems of support like schools and shelters weakens their chances of developing supportive peer or adult relationships, which are critical to resilience. Constant survival-mode living keeps them reactive rather than adaptive. In addition to the systemic challenges children face in India, several other factors can greatly undermine the development of childhood resilience. Exposure to domestic violence and emotional neglect deprives children of the stable and supportive relationships they need to build trust and confidence. Children who grow up in households with substance abuse or mental illness are often exposed to chronic instability and emotional trauma, disrupting their ability to develop coping mechanisms. Stigma that implements mental health prevents many children from receiving the emotional support and intervention they need. Bullying contributes to feelings of fear, isolation, and low self-esteem, whether in school or in the community, making it even more difficult for children to recover from adversity. Furthermore, external threats such as natural disasters, shifts due to exposure to climate change and local government conflicts, and political instability pose longer stress and uncertainty in their lives. These combined factors create an environment where resilience is difficult to grasp and grow, especially without consistent guidance and social support from adults (“Understanding the challenges faced by children in India,” 2023).

The term “environment” refers to everything that surrounds us—both living and non-living. It includes the air we breathe, the land we live on, the water we drink, and even our social networks. Changes in the environment can directly or indirectly influence our behaviour, growth,

and general well-being. While two types of environments are most recognised—Geographical Environment and Man-made Environment—there are also other ways to classify environments and discuss their components clearly and simply. The Geographical Environment, also called the natural environment, consists of all features that exist without human intervention. These include physical features such as mountains, rivers, plains, deserts, oceans, and climatic factors like storms, cyclones, and rain. It also includes biological elements like plants and animals that form ecosystems. The geographical environment supplies resources essential for survival and economic growth. Forests provide timber, fertile land aids agriculture, and water sources support drinking and irrigation needs. Often, humans have minimal control over these natural conditions—volcanic eruptions, storms, or droughts can significantly affect people and wildlife alike. The Man-made Environment is the result of human efforts to modify or control natural surroundings. It is also sometimes referred to as the social-cultural environment because it reflects the values, traditions, and innovations of a society. The man-made environment can be divided into the inner environment and the outer environment. The inner environment is the social and cultural framework that shapes our lives. It includes customs and traditions, organisations and institutions such as schools, banks, and hospitals, and laws and regulations that govern social behaviour. Because people's lives are organised around these social systems, the inner environment constantly influences how individuals think, behave, and interact. The outer environment focuses on physical modifications and technological advancements made by humans. It includes buildings, roads, bridges, and other infrastructure, as well as transportation and communication systems. It also involves tools and technologies, from electrical appliances in homes to large-scale industrial machines. While the inner environment deals with society's cultural and organisational aspects, the outer environment deals with practical structures that support daily life. Both are closely

connected and influence each other continuously. There are other ways to classify environments beyond geographical and man-made categories. These include the physical, social, and cultural environment. The physical environment is similar to the geographical environment and includes all-natural surroundings. The social environment represents human relationships, family structure, and communities. The cultural environment involves traditions, beliefs, art, and literature passed down through generations. Another way to classify the environment in geography is through the four spheres of the Earth: lithosphere, hydrosphere, atmosphere, and biosphere. The lithosphere refers to the solid outer layer of the Earth (land), the hydrosphere includes all water bodies such as oceans, rivers, and lakes, the atmosphere is the layer of gases surrounding the Earth, and the biosphere includes all living organisms such as plants, animals, and humans. Sometimes, a fifth sphere called the anthroposphere is added to show how humans alter natural systems. The anthroposphere includes all parts of the Earth that are impacted or modified by humans, such as cities, farms, and mines. Types of environments in geography often focus on natural landforms like mountain environments, coastal environments, and desert environments, and how these shape human settlement, agriculture, and lifestyle. Types of environments in social studies emphasise social and cultural aspects, such as how institutions, communities, and economic factors shape an individual's life. To better understand the environment, it helps to see it as a combination of interlinked components. These components include abiotic (non-living) components like land (lithosphere), air (atmosphere), and water (hydrosphere); biotic (living) components like plants, animals, and microorganisms (biosphere); and human-made components such as infrastructure, technology, and cultural institutions (anthroposphere or man-made environment). These components interact with each other constantly. For example, technology, a human-made

component, can extract resources from the abiotic environment and impact living organisms in the biotic environment (“Types of Environments: The Complete Guide for Students,” n.d.)

A natural environment is a type of an environment where human impact or interaction has been extremely limited. A natural environment encompasses all living and non-living things occurring naturally, meaning in this case not artificial. The term is most often applied to the Earth or some parts of Earth (“Natural Environment,” n.d.). The natural environment consists of land-based ecosystems such as grasslands and forests, aquatic ecosystems such as rivers and wetlands, and coastal and marine ecosystems such as mangroves and sea-grass meadows. Ecosystems include animals and plants and the interactions they have with each other and their physical environment. Climatic conditions, particularly rainfall patterns and fire regimes, strongly affect the type and extent of an ecosystem and the animals and plants that are present (Victoria State Government, 2022). The natural environment is interesting, with the 'assembled environment' which alludes to regions that have been in a general sense changed and impacted by human action, for example, urban areas, towns, etc. It is also known as the geological environment. The term 'natural environment' alludes to the non-human-made environmental elements and conditions in which all living and non-living things exist on Earth. It is a sporadic surface with different landforms like mountains, levels, fields, valleys, and so forth (“Natural Environment,” 2023).

The natural environment plays a crucial role in sustaining life on Earth. From providing essential resources such as water, air, and food, to supporting biodiversity and regulating the climate, the natural environment is vital for the well-being of all living organisms. One of the most compelling reasons to protect and preserve the natural environment is the significant economic benefits it provides. From tourism and recreation to agriculture and forestry, the natural environment plays a crucial role in sustaining various economic activities. The natural

environment has a significant impact on human health and well-being. Access to green spaces, such as parks and forests, has been linked to lower levels of stress, anxiety, and depression. Studies have shown that spending time in nature can improve mood, boost self-esteem, and enhance overall psychological well-being. Additionally, being in natural environments can help reduce the risk of chronic illnesses such as heart disease, obesity, and diabetes. The presence of greenery and open spaces encourages physical activity, which is crucial for maintaining good health. Moreover, exposure to natural light and clean air in outdoor settings can have positive effects on the body. Sunlight is a natural source of vitamin D, which is important for bone health and immune function. Fresh air in natural environments can also help reduce respiratory problems and improve lung function. In contrast, urban areas with high levels of pollution and limited green spaces have been associated with higher rates of mental health disorders and chronic diseases. Biodiversity and ecosystem services are intricately linked; Biodiversity refers to the variety of living species in a particular habitat or ecosystem. It includes plants, animals, microorganisms, and the genetic diversity within these species. Ecosystem services, on the other hand, are the benefits that humans and other species obtain from ecosystems, such as food, clean water, and air purification. Biodiversity is essential for the provision of these ecosystem services. The natural environment holds great cultural and recreational value for societies around the world. Many cultural traditions and practices are closely tied to the natural world, from spiritual ceremonies and festivals to art and storytelling. The environment provides inspiration for artists, writers, and musicians, and plays a significant role in shaping the cultural identity of communities. Additionally, the natural environment offers numerous recreational opportunities, including hiking, camping, birdwatching, and wildlife photography. These activities not only contribute to physical and mental well-being

but also foster a deeper appreciation for the beauty and diversity of the natural world (Brodowicz, 2024).

Human activity has had a negative impact on the natural environment. This is most apparent in the way that humans have changed the landscape through activities such as farming, forestry, and mining. These activities have led to soil erosion, deforestation, and habitat loss. In addition to this, humans have also polluted the air, water, and soil with harmful chemicals and waste products. This pollution has caused problems such as acid rain, global warming, and the depletion of the ozone layer. As a result of these problems, many species of animals and plants are now extinct or endangered. Habitat loss and pollution are also having a negative impact on human health, with an increasing number of people suffering from respiratory diseases, cancers, and other physical and mental health conditions

("Natural Environment," 2023).

In a world buzzing with screens and technology, the role of nature's impact on child development may go unnoticed, but getting the little one outside is more important than ever ("Embracing Nature's Impact on Child Development," 2023). School-going children in urban and peri-urban spaces in India often grow up disconnected from the natural world due to limited opportunities and spaces to be introduced to and engage meaningfully with nature (Nature Conservation Foundation, n.d.). Studies have found that the more time kids spend outside, the more active they tend to be. Playing outside naturally gets kids moving more. They run, jump, and play games that are not only fun but also great for their health. Outdoor play can also have a positive impact on children's language development and communication skills. Studies have shown children use significantly more words when playing outside compared to indoors, suggesting that outdoor play stimulates more diverse language use. The outdoor environment is

rich with opportunities for children to describe what they see, feel, and experience, which naturally enriches their language. The tranquillity and beauty of natural environments provide a stark contrast to the often hectic and structured indoor settings that children commonly experience. For example, a walk in the park or time spent in a garden can help children unwind and feel more at peace. The simple acts of listening to birdsong, watching the clouds, or feeling the grass under their feet can be incredibly soothing. Nature's ability to reduce stress and anxiety is not just psychological. The physical activity associated with playing outdoors – like running, climbing, or even the act of digging in the sand – releases endorphins, the body's natural stress-relieving and mood-boosting chemicals. Without the confines of walls or the structure of indoor toys, children are free to use their imagination to transform a stick into a magic wand, a pile of leaves into a fortress, or a playground into a jungle. This kind of imaginative play is crucial for developing creative thinking skills. The outdoors is a canvas that changes with the seasons, offering new textures, colours, and experiences. Children might build a fairy house in the spring, create leaf art in the autumn, or invent games in the snow. Each of these activities requires them to think creatively, using the resources available to them in nature. The unpredictable and ever-changing nature of outdoor environments offers a variety of scenarios where children need to use their judgement and creativity to find solutions. For instance, when encountering a stream, a child must consider the best way to cross it – whether it is finding the shallowest part, using stepping stones, or even building a makeshift bridge. These experiences teach children to evaluate options and understand cause-and-effect relationships. Building a stable sandcastle, as another example, isn't just a fun activity; it's a lesson in physics and engineering. Children learn about concepts like stability, weight distribution, and material properties in a hands-on, practical way. They experiment, adjust their strategies based on the results, and learn from their mistakes – all

fundamental aspects of effective problem-solving. Nature is like a sensory wonderland for kids, touching all their senses in exciting ways. The outdoors is full of different things to feel – the rough tree bark, the soft grass, and everything in between. These experiences are great for helping kids learn about and make sense of different textures. Listening to nature's symphony – the leaves rustling, birds singing, and streams flowing – is not just calming but also sharpens their hearing. Visually, the great outdoors is a burst of colours and shapes, constantly changing and moving, which is fantastic for boosting kids' observational skills. The smells of nature, like flowers or earth after rain, and the taste of things like fresh fruits straight from a plant, make the sensory adventure complete. All these experiences are more than just fun; they play a big part in helping kids grow their brains and understand their feelings better. Child development flourishes through a connection with nature, creating a wholesome environment that nurtures growth and exploration ("Embracing Nature's Impact on Child Development," 2023).

Researchers examining cognitive development from a psychological aspect have long valued interactions with nature; however, recent research endeavours into the importance of ecosystem services rarely point out long-valued aspects of psychological interactions with nature. For example, in recent examination of ecosystem services by the U.S. Environmental Protection Agency, many final ecosystem goods and services (FEGS) are addressed but the role of nature interactions in childhood development is ignored altogether (Landers and Nahlik 2013) (Summers, Vivian, & Summers, 2020). Research studies also support the understanding that connecting children with nature promotes their mental health and well-being and that this can be especially helpful for children who need to cope with stressful adverse conditions and the emotional responses that their life situations evoke. Such conditions can include poverty, neglect, violence, abuse, and growing up in a family with mental health or substance abuse problems. Children

experiencing such conditions often experience toxic stress which can negatively impact brain development and weaken the body's ability to respond to stressful situations. A multidisciplinary body of research indicates that increased nature exposure and engagement can be effective in helping children deal with stress and anxiety. Adverse childhood experiences (ACEs) – including poverty, violence, abuse, illness and hospitalization, migration, and out-of-home placement – are linked to chronic health problems, mental illness, and substance misuse in adulthood. Interventions for children with ACEs are thus of utmost importance to prevent or minimize such negative outcomes. Research supports the idea that nearby nature may help children cope with adversity and that different forms of engagement with nature can reduce stress and anxiety. Nature-based interventions for children with ACEs include the use of gardens and forests for healing, opportunities to care for animals, and family outdoor leisure activities. Individual studies as well as reviews of the research indicate that nature may serve as a protective factor before the harmful impacts of ACEs on development occur ("Bibliography: Nature's Role in Promoting Resilience, Regulation and Recovery," n.d.).

Definition of Key Terms

Natural Environment

Theoretical meaning:

The natural environment can be defined as the physical and biological conditions that exist in an area, including landforms, climate, soil, water, plants, and animals ("Natural Environment," 2023).

Operational definition:

In this study, natural environment is defined as the level of an individual's exposure to nature, as measured by the Nature Exposure Scale- II (NES- II). Participants respond to items

assessing their frequency and extent of interaction with natural setting, with higher scores indicating greater exposure to nature.

Childhood Resilience

Theoretical meaning:

Childhood resilience, a term which, according to Rutter (1990, p. 181) refers to "the positive pole of the ubiquitous phenomenon of individual difference in people's responses to stress and adversity" (Howard, Dryden & Johnson, 2010).

Operational definition:

In this study, childhood resilience is defined as the degree to which children demonstrate personal and social skills that support positive adaptation in the face of adversity, as measured by the Child and Youth Resilience Measure- Revised (CYRM- R), with high scores indicating stronger resilience characteristics.

Late Childhood

Theoretical meaning:

Middle childhood is the developmental period between early childhood and adolescence, sometimes referred to as late childhood or early adolescence (Blume, 2014), when children transition from dependent preschoolers to young individuals with an active role in their family and community structures (Mah & Jones, 2012).

Operational definition:

In this study, late childhood is defined as the developmental stage encompassing children enrolled in 5^{th}, 6^{th}, and 7^{th}, standards, typically ranging in age from 10 to 12 years.

1.1 Background

The natural environment encompasses all living and non-living elements that occur naturally on Earth, including forests, rivers, mountains, and various ecosystems such as grasslands, wetlands, and coastal areas. These ecosystems not only sustain biodiversity but also play a crucial role in regulating climate, supporting life, and enhancing human well-being. Despite increasing urbanization and technological development, access to and interaction with nature remains vital, especially for children, whose development is shaped by their surrounding environments. Research indicates that natural environments support psychological health by reducing stress, anxiety, and depression, and encouraging physical activity and creativity through sensory engagement (Brodowicz, 2024; "Natural Environment," 2023; Victoria State Government, 2022).

In India, rapid urban growth has led to disconnection between children and nature, particularly in urban and peri-urban areas where opportunities to explore natural settings are increasingly limited. This separation may hinder their cognitive, emotional, and social development (Nature Conservation Foundation, n.d.). Nature's positive effects on child development extend beyond physical health to include language enrichment, problem-solving, imagination, and emotional regulation. Outdoor environments provide rich sensory experiences, inspire creativity, and foster resilience by helping children manage stress and navigate challenges in a less structured setting ("Embracing Nature's Impact on Child Development," 2023).

Resilience in childhood- the capacity to adapt and recover from stress or adversity- is shaped by both internal traits and external supports. When children are exposed to adverse conditions such as poverty, neglect, or family trauma, they may develop toxic stress, which can affect brain development and emotional regulation. In these contexts, access to natural environments may serve as a protective factor, offering emotional relief, opportunities for

exploration, and supportive conditions for recovery. Nature-based interventions, such as outdoor play, green schoolyards, and therapeutic garden spaces, have been shown to help children process stress, regulate emotions, and build coping skills, especially those exposed to adverse childhood experiences (Summers, Vivian, & Summers, 2020; "Bibliography: Nature's Role in Promoting Resilience, Regulation and Recovery," n.d.).

As ecosystem services are increasingly studied from ecological and economic perspectives, the psychological and developmental benefits of nature exposure- especially in childhood- are often overlooked (Landers & Nahlik, 2013). By examining how the natural environment may act as a buffer against adversity and enhance resilience among school-aged children, this study aims to fill a critical research gap. It seeks to better understand how nature exposure contributes to the healthy development of children navigating life's challenges in today's complex social and environmental landscape.

1.2 Theoretical Background

The current study assesses the protective effects of Natural environment on Childhood resilience and the study is grounded in Attention Restoration Theory.

The 'Attention Restoration Theory' was first described by Rachel and Stephen Kaplan in their 1989 book published in 'The experience of nature: A psychological perspective'. This is the theory that spending time in nature has a uniquely restorative effect on us, both cognitively and mentally. It suggests that the mere action of spending time in the countryside, walking in a forest, sitting in a park, watching the sunset, or even just looking out the window at a green space provides us with the opportunity to rest, reflect and restore the resources that we require to cope with everyday life (Asher, 2023).

Attention Restoration Theory (or ART) proposes that in addition to exposure to nature being enjoyable, that it also has restorative effects, especially in terms of our ability to focus and concentrate. They propose that there are four stages along the path to restoration: Clearing the mind, Recovery from mental fatigue, Soft fascination, and "Reflection and Restoration," According to Kaplan and Kaplan, there are four key components that they believed were necessary for a restorative environment or restorative experience: Being Away, Soft Fascination, Extent, Compatibility (Asher, 2023).

1.3 Need and Significance

This research addresses critical gaps in existing literature by exploring the protective role of natural environments in fostering childhood resilience. While previous studies have examined various factors influencing resilience, the specific contributions of natural settings such as green spaces, forests, and water bodies remain underexplored. By focusing on this intersection, the study aims to advance scholarly understanding and provide a more comprehensive view of how ecological contexts contribute to psychological strength in children.

Understanding childhood resilience through the lens of environmental exposure has profound implications for mental health interventions. Nature-based therapies and eco-therapeutic practices are emerging as promising strategies in mental health care, especially for children affected by trauma, stress, or adverse life experiences. This study provides empirical support for integrating natural environments into therapeutic models, potentially transforming how practitioners approach child mental health and preventative care.

The findings have practical applications within educational settings. Schools can benefit from insights into how natural spaces whether outdoor classrooms, school gardens, or nearby parks

enhance emotional regulation, concentration, and social skills. This research supports a more holistic approach to child development, encouraging educational institutions to incorporate environmental access as part of their well-being strategies.

In urban planning and environmental design, the study informs policies aimed at creating child-friendly cities. It emphasizes the need for equitable access to green spaces, particularly in underserved or densely populated communities. By highlighting nature's role in promoting psychological resilience, planners and policymakers can better prioritize green infrastructure in urban development.

In the context of disaster recovery and trauma-informed care, the research underscores nature's role as a stabilizing and healing force for children exposed to crises. Incorporating natural elements in recovery programs can support emotional healing and community rebuilding, offering a low-cost, accessible resource to aid in trauma recovery.

The study contributes to the broader goals of sustainable development and environmental advocacy. Demonstrating the psychological benefits of nature for children not only promotes healthier individuals but also fosters a generation more connected to and likely to protect the natural world. This supports intergenerational environmental stewardship and aligns with global sustainability goals.

From a disciplinary standpoint, the research enriches both travel psychology and environmental psychology by shedding light on how nature-based experiences influence children's emotional resilience. It also supports the growing field of nature-based counselling, offering evidence that environmental settings can be integral to effective psychological support.

This study bridges multiple fields psychology, education, urban planning, public health, and environmental science highlighting the interdisciplinary importance of recognizing nature as a vital factor in building childhood resilience.

1.4 Statement of The Problem

Despite a growing body of evidence highlighting the positive effects of natural environments on mental well-being, the specific ways in which nature contributes to childhood resilience remain insufficiently understood. While numerous studies have documented general psychological benefits of exposure to nature, there is a significant gap in understanding how natural settings directly influence the development of resilience in children.

This study aims to address this critical gap by assessing the protective effects of natural environments on the resilience of children, with a dual focus on personal resilience and caregiver resilience. Personal resilience refers to the internal strengths and coping abilities of a child, encompassing both intrapersonal and interpersonal dimensions. In contrast, caregiver resilience pertains to the qualities of significant relationships in a child's life, particularly with a primary caregiver, family member, or other close relational figure, which provide emotional security, support, and stability.

By exploring how exposure to nature influences both the child's internal coping resources and the strength of their critical relationships, this research seeks to offer a more comprehensive understanding of how natural environments serve as a buffer against stress and adversity, ultimately enhancing childhood resilience.

1.5 Objectives

- To assess the relationship between exposure to natural environments and childhood resilience
- To assess the relationship between exposure to natural environments and personal resilience in children
- To assess the relationship between exposure to natural environments and caregiver resilience of children
- To understand the type of exposure (Nature exposure in everyday life, Nature exposure during excursions, and Nature exposure during physical activity) that is most related to childhood resilience
- To examine gender differences in exposure to natural environments and childhood resilience

CHAPTER II

LITERATURE REVIEW

2.1 Review of Relevant Literature

A literature review is a comprehensive review and analysis of published literature that relates to a particular research topic or question being studied. Various forms of literature are reviewed that can include journal articles, books, magazine, and blog articles, published abstracts, conference proceedings, and dissertations. Literature review in research is one of the pillars on which your research idea stands since it provides context, relevance, and background to the research problem you are exploring ("What is Literature Review," 2024).

Literature reviews can be categorized as experimental and theoretical. Experimental literature review basically refers to surveying all the information available on a particular topic and critically analysing the gaps that need to be worked upon. In this sense, it essentially forms the first experiment of any research project. The more extensive the review, the more precise and systematic the research project will be. Therefore, it is one of the most critical parts of one's research ("What is Literature Review," 2024).

Every research report, thesis, dissertation, and research article begin with an introduction to the topic of research. This forms the literature review for the article. The literature review's main purpose is to introduce readers to the need for research. A literature review should begin with a thorough literature search using the main keywords in relevant online databases. The Background of a literature review introduces the readers to the field of study. Recent progress on the study topic which can be organized thematically or chronologically. Once a problem statement has been defined, the strengths and pitfalls of other studies that have tackled the problem statement should be discussed. This is important for outlining the need and novelty of the research. A literature review should be a critical and analytical summary of the selected literature that guides the readers through the central theme of the research ("What is Literature Review," 2024).

Childhood Resilience

Condly (2006) through his study "Resilience in Children: A Review of Literature with Implications for Education" presents a comprehensive analysis of the literature on resilience in children, with particular attention to the educational implications of resilience research. The author underscores that a nuanced understanding of both risk and resilience is vital for designing effective educational policies and programs aimed at mitigating the adverse effects of poverty, family dysfunction, community violence, and minority status on children's development. Condly emphasizes that resilience arises from the interaction between individual personality characteristics and multiple layers of environmental influence, including family, peers, educators, and broader community systems. The review critiques current approaches to resilience research and identifies the emergence of advanced statistical methods, such as Structural Equation Modeling (SEM), as a promising development. Condly also discusses the role and limitations of meta-analyses in resilience research. A major challenge in promoting resilience through educational interventions, according to Condly, lies in the inherent characteristics of resilience itself. High intelligence and an even temperament two key traits associated with resilience may be partially genetic and difficult to modify through external programs (Condly, 2006).

Sankaranarayanan and Cycil (2014), In their study, "Resiliency Training in Indian Children: A Pilot Investigation of the Penn Resiliency Program," explored the applicability and effectiveness of the Penn Resiliency Program (PRP) in an urban Indian context. The researchers had two main goals: (1) to evaluate the attributional styles of early adolescents in India and identify the presence of any negative explanatory tendencies, and (2) to assess the effectiveness of the PRP in promoting a more optimistic orientation among Indian children. The study used a quasi-experimental design with 58 children, split equally between intervention and control groups.

Participants were assessed using the Children's Attributional Style Questionnaire (CASQ) both before and after the intervention. An Analysis of Covariance (ANCOVA) revealed that children who underwent the PRP showed a significant reduction in pessimistic explanatory style and a notable increase in optimistic thinking compared to those in the control group. This indicates that the PRP can effectively shift attributional styles in a positive direction, even in a non-Western cultural setting (Sankaranarayanan & Cycil, 2014).

Bellis et al. (2018), in their study "Adverse Childhood Experiences and Sources of Childhood Resilience: A Retrospective Study of Their Combined Relationships with Child Health and Educational Attendance," explored how adverse childhood experiences (ACEs) and community-based resilience assets jointly affect child health and school attendance. Conducted as a national cross-sectional retrospective survey in Wales with 2,452 participants, the study assessed the prevalence of self-reported childhood health problems and absenteeism in relation to ACE exposure. Findings indicated a clear dose–response relationship: as the number of ACEs increased, so did the likelihood of poor physical health (including asthma, allergies, and digestive issues) and greater school absenteeism. However, the presence of community resilience assets such as access to a trusted adult, having supportive friends, being treated fairly, and being given opportunities to use abilities significantly mitigated these negative outcomes. Notably, among individuals with four or more ACEs, the prevalence of poor childhood health dropped dramatically from 59.8% to 21.3% when all key resilience factors were present. This underscores the protective role of socio-environmental support systems in buffering children from the impacts of adversity. The authors concluded that while preventing ACEs entirely may be unfeasible, strengthening community-based resilience supports offers a practical and effective approach to improving childhood health and educational outcomes

(Bellis et al., 2018).

Chawla (2020), in the article "Childhood Nature Connection and Constructive Hope: A Review of Research on Connecting with Nature and Coping with Environmental Loss," reviewed existing research on children's connection with nature and their emotional responses to environmental degradation. The review highlighted how children's reduced interaction with nature driven by modern lifestyles has prompted conservation efforts aimed at re-establishing this connection due to its long-term effects on environmental stewardship. The author synthesized findings from both quantitative and qualitative studies, noting that childhood experiences in natural settings foster lifelong care for the environment and enhance psychological well-being. While most literature emphasizes the positive outcomes of nature connection, such as joy, calmness, and increased ecological concern, Chawla also discussed negative emotions like sadness, frustration, and eco-anxiety that emerge as children become aware of ecological crises. These emotional responses are interpreted as indicators of deep ecological connectedness. Importantly, the review also identified constructive coping mechanisms and hope-sustaining practices that help children process environmental loss without becoming overwhelmed. Chawla called for a more integrated research approach linking studies on nature connection with those on coping strategies to better support youth navigating environmental challenges while fostering resilience and proactive engagement (Chawla, 2020).

Mesman, Vreeker, and Hillegers (2021) in their study "Resilience and mental health in children and adolescents: an update of the recent literature and future directions" emphasize the importance of understanding resilience to better promote optimal psychological development. In recent years, the concept of resilience has gained increasing attention as a critical factor in the mental health and developmental outcomes of children and adolescents, particularly those at risk

for psychiatric disorders. Their systematic review provides a comprehensive update on recent findings in this domain. The authors analyzed 25 empirical studies, all of which reported a consistent association between higher levels of resilience and lower levels of mental health problems among children and adolescents. This finding held true across a variety of populations and measurement tools, suggesting the robustness of resilience as a protective factor. Despite the diversity in methodologies, the literature points to a clear and positive role of resilience in mitigating the effects of adverse experiences. A key theme emerging from the review is the multisystemic nature of resilience. Resilience is not confined to individual traits but is influenced by a range of interconnected systems, including social, cultural, familial, and individual factors. Notably, while the reviewed studies offer valuable insights, the authors highlight a scarcity of longitudinal research

(Mesman, Vreeker, & Hillegers, 2021).

Schafer (2022), in the article “Recognizing Resilience in Children: A Review,” conducted a scoping review of current research on child resilience, grounding the discussion within the Relational Developmental Systems (RDS) theory. This framework views resilience not as the product of isolated traits or purely environmental influences but as the dynamic interplay between individual characteristics and contextual factors. Schafer emphasized that resilience emerges from this mutual influence rejecting simple nature-versus-nurture dichotomies. The review identified key individual-level contributors to resilience, including executive function, emotional regulation, self-efficacy, growth mindset, sense of belonging, and determination. Equally important were environmental assets such as caring adult relationships, high expectations, creative and unstructured play opportunities, nutrition, empowerment, cultural and faith-based supports, access to nature, and social justice structures. Schafer argued that resilience outcomes are most likely

when both personal and contextual protective factors are present and aligned. The findings underline the importance of holistic, systems-oriented policies and practices that nurture not only children's internal capacities but also supportive relational environments that enable those capacities to thrive. The review called on educators, practitioners, and policymakers to design interventions that reflect this interdependent reality of child development and resilience (Schafer, 2022).

Koshy et al. (2022), in their study “Early Childhood Stimulating Environment Predicts Later Childhood Resilience in an Indian Longitudinal Birth Cohort Study,” examined how early childhood factors influence resilience at 9 years of age in a community birth cohort from Vellore, South India. The study assessed resilience using the Child and Youth Resilience Measure and cognition via Malin’s Intelligence Scale for Indian Children. Early childhood variables included growth stunting, maternal depression, home environment, and socioeconomic status at 2 years. Out of 251 newborns initially recruited, 205 children (81.7%) participated in the 9-year follow-up. Results showed that individual resilience was significantly associated with verbal cognition scores at 9 years and the total stimulating home environment score at 2 years, even after adjusting for stunting, maternal depression, and SES. Notably, the total resilience score was primarily linked to concurrent verbal intelligence. Daily stimulation in the home environment was a key factor related to individual resilience. The findings emphasize the importance of promoting stimulating home environments during early childhood, especially in low-resource settings, to support holistic development and mental health in children (Koshy et al., 2022).

Hirisave and Chari (2023), In their narrative review “Resilience in Child and Adolescent Psychopathology – The Indian Context,” addresses a significant research gap by exploring resilience-promoting factors among Indian children and adolescents with psychopathological

conditions. The study draws from both published and unpublished research conducted at the National Institute of Mental Health and Neuro Sciences (NIMHANS), India, focusing on resilience as a central variable. The authors reviewed four studies that examined children aged 5 to 16 years who were either from impoverished socioeconomic backgrounds or had diagnosed emotional/behavioural disorders. Using the Structured Scenario with Questions-Adapted tool, these studies assessed the presence and influence of resilience-promoting factors. The review highlights a positive relationship between resilience and mental well-being, reinforcing the idea that resilience serves as a protective factor even in the presence of psychiatric diagnoses or environmental adversity. A notable finding is that children demonstrated greater use of resilience-promoting factors than adolescents, suggesting developmental differences in adaptive coping mechanisms. Hirisave and Chari conclude that psychopathology and resilience are not mutually exclusive, advocating for resilience assessments as part of clinical evaluation in child and adolescent mental health. They argue that focusing on resilience not just pathology can help inform more balanced and strengths-based interventions and care strategies (Hirisave and Chari, 2023).

Aumose, Raj, and Mani (2023), in their study "Stress and Resilience among the Children Living in Shelter Homes," investigated the levels of stress and resilience among children residing in shelter homes in the Virudhunagar district of Tamil Nadu, India. Using a descriptive research design and stratified random sampling, the researchers selected 60 children from four randomly chosen shelter homes. Data collection involved an interview schedule incorporating socio-demographic questions, Barbara P. White's Perceived Stress Scale for Children (2006), and the Resilience Scale by Wagnild and Young (1993). The findings showed that 58.3% of children had low resilience, and 52% experienced higher-than-normal stress levels. A positive correlation was identified between stress and resilience, indicating that some children develop adaptive capabilities

as a response to increased stress. The study noted no significant gender differences in resilience or stress, but highlighted several influencing factors. Children without parents and those whose mothers were employed displayed higher resilience. Additionally, a greater number of siblings correlated with reduced stress, suggesting the protective role of familial support. The study concluded that while stress is prevalent among children in shelter homes, resilience traits are also evident. The authors call for community-level, well-resourced interventions to enhance resilience, highlighting the need for safe spaces, positive adult role models, and accountable public institutions to support the mental well-being and development of these vulnerable children (Aumose, Raj, & Mani, 2023).

McMahon et al. (2024), in their study "The Relationships Between Resilience and Child Health Behaviours in a National Dataset," investigated how resilience at different socio-ecological levels individual (child), family, and neighbourhood is associated with various child and family health behaviours. Drawing from the 2016–2021 National Survey of Children's Health, they conducted a secondary data analysis using multiple regression models to examine how these three resilience domains relate to six specific health behaviours. The study's findings indicate that higher resilience across all domains is consistently associated with better health behaviours. Notably, children aged 0–5 with high resilience in all three domains were found to have over twice the odds of good-quality sleep compared to their counterparts with low resilience in all domains (OR = 2.21; 95% CI 1.78–2.63). Similar positive associations were observed across other health behaviours, underscoring the cumulative and reinforcing effect of resilience at multiple levels (McMahon et al., 2024).

Natural Environment

Frumkin, Jackson, and Coussens (2002) in the book "Health and the Environment in the Southeastern United States," emphasized the intrinsic link between the natural environment and human health. The report defines the natural environment as the biosphere- a thin layer containing the earth's air, soil, water, and living organisms- which is essential for life support. While much of the research and legislation in recent decades has focused on regulating environmental toxins to reduce harmful exposures, the report also highlights a more direct connection between nature and well-being: the enhancement of physical, mental, and social health through daily exposure to the natural environment. Frumkin (2001) noted the nearly universal human preference for contact with natural elements, suggesting a biological inclination toward nature that yields tranquillity and health benefits. Supporting this, previous studies have shown that exposure to natural views and settings benefited hospitalized post-surgical patients (Ulrich, 1984), employees (Kaplan, 1992), and prisoners (Moore, 1981). Additional health advantages have been observed through gardening, animal interaction, and wilderness experiences. This body of evidence suggests a broader paradigm of environmental health that goes beyond minimizing harm to also include health-promoting environmental exposures (Frumkin, 2001) (Frumkin, Jackson, & Coussens, 2002).

Wells and Evans (2003), in their study Nearby Nature: A Buffer of Life Stress among Rural Children, investigated how natural environments influence children's mental well-being. The sample included 337 rural children in Grades 3 through 5. Using a standard parent-reported measure of children's psychological distress and children's own ratings of global self-worth, the study examined how environmental factors interact with psychological outcomes. The results showed that levels of nearby nature moderate the impact of stressful life events on the

psychological well-being of children. This suggests that access to natural surroundings may serve as a protective factor for children facing life stress, particularly in rural settings (Wells & Evans, 2003).

Corraliza, Collado, and Bethelmy (2012), in their study Nature as a Moderator of Stress in Urban Children, examined the relationship between nature exposure and stress levels among urban youth. The sample consisted of 172 children, aged 10 to 13, living in an urban area in Spain. The researchers used the Perceived Nature Questionnaire, the Perceived Stress Scale, and the Stressful Events Questionnaire to assess the children's interaction with nature and their stress levels. The findings indicated that children with more access to natural areas, as well as more perceived nature in the home and school environment, had lower stress levels. This study highlights the moderating role of natural environments in reducing stress among children in urban contexts (Corraliza, Collado, & Bethelmy, 2012).

Calogiuri and Chroni (2014) conducted an integrative systematic review titled The Impact of the Natural Environment on the Promotion of Active Living, following PRISMA guidelines. Their study involved a comprehensive literature search using PubMed (updated to October 2013), reference list scrutiny, and expert consultation. They reviewed 90 peer-reviewed articles focused on three main research questions: effects of physical activity (PA) in natural environments (NE) on individuals' feelings and beliefs; relationships between PA and availability of NEs; and motivational processes underlying visits to NEs in association with PA. Using the theory of planned behaviour (TPB) to analyze and integrate findings, the authors found that people's experiences in using the NE enhance attitudes toward PA and perceived behavioural control through positive psychological states and stress-relieving effects, leading to stronger intentions to engage in PA. Individual and environmental barriers, expressed as social support and behavioural

control, influence this process via subjective norms and perceived behavioural control. Instrumental beliefs, such as the desire to enjoy nature and expected health benefits, also affect attitudes. Distinct patterns emerged between neighbourhood-based PA and outdoor recreation in natural settings. The review concluded that the availability of natural environments and attractive nature views are important contributors to PA, but personal characteristics and environmental barriers must also be considered. The authors recommended policy and infrastructural interventions to ensure access and maintenance of natural environments, alongside social campaigns to promote nature as a motivator for physical activity, stress reduction, and achieving aesthetic and health goals (Calogiuri & Chroni, 2014).

Tillman et al. (2019), in their study "Nature makes people happy, that's what it sort of means:" Children's definitions and perceptions of nature in rural Northwestern Ontario, explored how children understand and engage with nature in relation to their well-being. The sample included eighty-four rural Canadian children aged 9 to 14. Using semi-structured small-group interviews, the study found that rural children were aware of the benefits of nature engagement for their socio-emotional well-being and were pro-active in turning to nature to experience these benefits. These findings emphasize children's own recognition of nature as a positive influence on their emotional health and highlight the intentional ways in which they seek out nature for support (Tillman et al., 2019).

Summers, Vivian, and Summers (2020), in their study The Role of Interaction with Nature in Childhood Development: An Under-Appreciated Ecosystem Service, investigated the impact of natural ecosystems on child development. Using secondary data, the researchers collected and analyzed information related to children's interactions with nature. The study emphasized that interaction with natural ecosystems can influence not only health but well-being throughout life.

This highlights the long-term significance of early nature engagement as an essential ecosystem service supporting overall developmental outcomes
(Summers, Vivian, & Summers, 2020).

Patel, Agrawal, and Mathew (2020), in their narrative review Understanding the Resilience and Mental Health Impacts of Natural Disasters in India, examined the psychological effects of disasters on affected individuals. The study utilized secondary data collected and analysed from existing literature. The review found that there is a substantial body of literature on the topic that allows for the identification of several distinct and interrelated pathways by which disasters can adversely impact mental health, as well as several coping and adaptation strategies. This highlights the complex relationship between disaster exposure, mental health outcomes, and resilience mechanisms within the Indian context (Patel, Agrawal, & Mathew, 2020).

Batterham et al. (2022) conducted a Systematic Review of Quantitative Studies Assessing the Relationship Between Environment and Mental Health in Rural Areas. Through a systematic search across three databases—PsycINFO, MEDLINE, and Web of Science—4,368 articles were initially identified, with 28 meeting the eligibility criteria for inclusion. The review found that poorer mental health and well-being were typically associated with extreme climate or weather events and environmental degradation. These relationships were most often assessed at area-wide or community levels rather than at the individual level. The authors concluded that there is a significant gap in research focusing on the environmental condition of land and its mental health impacts at the individual level, especially within farming contexts. They emphasized the need for interdisciplinary expertise and diverse methodologies to address this gap. Furthermore, few studies have explored how natural resource management practices or biodiversity affect mental health. While there is consistent evidence of the negative mental health impacts of extreme climate events

in rural areas, the review highlights considerable gaps in understanding how broader rural environmental factors influence psychological well-being

(Batterham et al., 2022).

Liu and Green (2023), in their systematic review The Effect of Exposure to Nature on Children's Psychological Well-Being, investigated the psychological impacts of nature exposure on children aged 6–12 years old. The researchers collected and analysed secondary data, focusing on existing studies within this age group. Most of these studies employed cross-sectional rather than longitudinal designs, and most identified positive psychological outcomes associated with children's exposure to nature. This review underscores the beneficial role of natural environments in supporting children's psychological well-being, while also highlighting a need for more longitudinal research in the field

(Liu & Green, 2023).

Guo (2024), in the study Impact of the Natural Environment on Individuals' Psychological Well-being, reviewed research on naturopathy, outdoor experiences, and personality development to explore the effects of the natural environment on the human psyche. The study emphasized that the impact of the natural environment on mental health, life satisfaction, and personality development is indisputable. Evidence shows that nature-based therapies, outdoor activities, and early exposure to nature contribute to increased well-being and the development of positive personality traits such as empathy and environmental awareness. Guo further argued that to sustain these benefits, biophilic design principles should be integrated into urban planning. The creation of sustainable, accessible, nature-rich cities can enhance human mental health, foster a sense of connection to the environment, and promote a more sustainable future. Prioritizing nature in urban

landscapes is therefore essential for building healthier, happier, and more environmentally conscious societies (Guo, 2024).

2.2 Summary

This chapter explores the existing body of literature on two key constructs central to the current study: childhood resilience and the natural environment, emphasizing their interconnected impact on children's mental health, development, and well-being. The reviewed literature includes global perspectives, with a notable emphasis on Indian and rural contexts, supporting the relevance of these constructs to both international and local frameworks.

Resilience in children is understood as a dynamic and multifactorial construct shaped by personal attributes and environmental factors. Condly (2006) emphasized that resilience results from complex interactions between individual characteristics such as temperament and intelligence, and environmental layers including family, peers, and community. Schafer (2022), using the Relational Developmental Systems theory, argued for a holistic view, wherein individual traits like executive function and emotional regulation interact with contextual supports such as caring adults and access to nature. Several studies explored resilience from the Indian perspective. Koshy et al. (2022) found that early home stimulation environments significantly predicted later resilience in children in a longitudinal birth cohort. Similarly, Sankaranarayanan and Cycil (2014) demonstrated the effectiveness of the Penn Resiliency Program in promoting optimism among Indian adolescents. Hirisave and Chari (2023) extended this discussion into clinical contexts, finding that resilience factors served as protective mechanisms even in children with psychopathological disorders. Large-scale surveys, such as Bellis et al. (2018), underscored the buffering role of community resilience assets like supportive friendships and trusted adults in mitigating the impact of Adverse Childhood Experiences (ACEs) on health and school attendance.

McMahon et al. (2024) reinforced this by showing that resilience at child, family, and community levels was associated with healthier behaviours and better sleep quality in children. Studies by Chawla (2020) and Mesman et al. (2021) further confirmed that resilience correlates with better mental health outcomes, while also noting the emotional toll of environmental crises. Notably, Aumose, Raj, and Mani (2023) found that while stress levels were high among children in Tamil Nadu shelter homes, resilience traits were still present, especially in children with parental or sibling support.

Parallel to resilience research is a growing body of work highlighting the role of the natural environment in child development. Frumkin et al. (2002) and Ulrich (1984) asserted that contact with nature contributes to psychological well-being across settings, while Wells and Evans (2003) demonstrated nature's buffering effect against life stress in rural children. In urban settings, Corraliza et al. (2012) found that higher exposure to nature reduced perceived stress in school-aged children. Studies such as Calogiuri and Chroni (2014) and Tillman et al. (2019) linked nature engagement with increased physical activity and positive emotional states, driven by intrinsic motivations such as peace, joy, and connection. Summers et al. (2020) described nature as a critical ecosystem service supporting cognitive and emotional development throughout life. Guo (2024) and Liu & Green (2023) confirmed that early nature exposure positively affects empathy, well-being, and environmental awareness, suggesting the need for biophilic urban planning. In rural India, Patel et al. (2020) and Batterham et al. (2022) discussed how environmental disasters and degradation impact children's mental health, identifying nature-based coping mechanisms as vital for adaptation. Their findings align with the argument that environmental exposures must be viewed not only as potential stressors but also as opportunities for fostering resilience and psychological growth.

The literature reveals a robust connection between nature exposure and personal and caregiver resilience in children. However, a noticeable gap exists in integrated studies examining both constructs simultaneously, particularly in late childhood populations in Indian contexts. This study aims to fill this gap by examining how exposure to the natural environment relates to resilience in late childhood, providing culturally and developmentally relevant insights.

2.3 Research Questions

1. What is the impact of exposure to natural environments on overall childhood resilience?
2. How does exposure to natural environments influence personal resilience in children?
3. How does exposure to natural environments influence caregiver-related resilience factors in children?
4. Which type of nature exposure
    a. Nature exposure in everyday environments,
    b. Nature exposure during excursions outside everyday environments, or
    c. Nature exposure during physical activity

    has the most impact on resilience characteristics in children?

2.4 Hypothesis

$H0_1$: Exposure to natural environments does not relate to overall childhood resilience

$H0_2$: Greater exposure to natural environments does not relate to personal resilience in children

$H0_3$: Greater exposure to natural environments does not relate to caregiver-related resilience in children

$H0_4$: There is no relationship between nature exposure during everyday life, nature exposure during excursion, nature exposure during physical activity towards childhood resilience

$H0_5$: There is no difference between girls and boys in exposure to natural environment and childhood resilience

CHAPTER III

METHOD

Research methodology is a structured and scientific approach used to collect, analyse, and interpret quantitative or qualitative data to answer research questions or test hypotheses. A research methodology is like a plan for carrying out research and helps keep researchers on track by limiting the scope of the research. Before writing a research methodology, aspects like research limitations and ethical concerns must be considered. The research methodology section in a scientific paper describes the different methodological choices made, such as the data collection and analysis methods, and why these choices were selected. The reasons should explain why the methods chosen are the most appropriate to answer the research question. A good research methodology also helps ensure the reliability and validity of the research findings. Having a good research methodology in place has the following advantages: Helps other researchers who may want to replicate one's research; the explanations will be of benefit to them, One can easily answer any questions about their research if they arise at a later stage, A research methodology provides a framework and guidelines for researchers to clearly define research questions, hypotheses, and objectives, It helps researchers identify the most appropriate research design, sampling technique, and data collection and analysis methods, A sound research methodology helps researchers ensure that their findings are valid and reliable and free from biases and errors, It also helps ensure that ethical guidelines are followed while conducting research, and A good research methodology helps researchers in planning their research efficiently, by ensuring optimum usage of their time and resources (Sreekumar, 2023).

3.1 Research Design

"A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure." (Selltiz et al., 1962). In fact, the research design is the conceptual structure within which research

is conducted; it constitutes the blueprint for the collection, measurement, and analysis of data. As such the design includes an outline of what the researcher will do from writing the hypothesis and its operational implications to the final analysis of data. Research design is needed because it facilitates the smooth sailing of the various research operations, thereby making research as efficient as possible yielding maximal information with minimal expenditure of effort, time, and money. A good design is often characterised by adjectives like flexible, appropriate, efficient, economical, and so on. Generally, the design which minimises bias and maximises the reliability of the data collected and analysed is considered a good design. Different research designs can be conveniently described if we categorize them as: (1) research design in case of exploratory research studies; (2) research design in case of descriptive and diagnostic research studies, and (3) research design in case of hypothesis-testing research studies. Exploratory research studies are also termed as formulative research studies. The main purpose of such studies is that of formulating a problem for more precise investigation or of developing the working hypotheses from an operational point of view. The major emphasis in such studies is on the discovery of ideas and insights. As such the research design appropriate for such studies must be flexible enough to provide opportunity for considering different aspects of a problem under study. Descriptive research studies are those studies which are concerned with describing the characteristics of a particular individual, or of a group, whereas diagnostic research studies determine the frequency with which something occurs or its association with something else. The studies concerning whether certain variables are associated are examples of diagnostic research studies. As against this, studies concerned with specific predictions, with narration of facts and characteristics concerning individual, group or situation are all examples of descriptive research studies. Most of the social research comes under this category. From the point of view of the research design, the descriptive as well as diagnostic

studies share common requirements and as such, we may group together these two types of research studies. Hypothesis-testing research studies (generally known as experimental studies) are those where the researcher tests the hypotheses of causal relationships between variables. Such studies require procedures that will not only reduce bias and increase reliability, but will permit drawing inferences about causality. Usually experiments meet this requirement. Hence, when we talk of research design in such studies, we often mean the design of experiments (Kothari, 2018).

The research design used in this research was quantitative. Quantitative research involves quantifying things and asks questions such as "how long," "how many," and "the degree to which." Quantitative research aims to quantify the data and generalize findings from a sample of a study from varied perspectives. It requires collecting data, analysing, and interpreting quantifiable data to prove the hypothesis produced in a specific study. Quantitative research relies on data collection and data analysis which is based on a logical method with the focus on testing theory, influenced by empiricist and positivist ideologies (Bryman, 2016). Quantitative research is classified into four types: Experimental research comprises of a hypothesis and variable, which can be measured, calculated, and compared in a controlled environment. The purpose of experimental research is to discover a corelation and relationship between the dependent variable and independent variable. Data in an experimental study must be quantifiable or measured. It is also known as intervention research or group comparison research. It is a technique used in quantitative research to assess if an activity or materials affect participant outcomes, The purpose of correlational research is to identify variables that have a connection in a way that a change in one affects a change in the other. In this type of design researcher examine two variables to demonstrate if there is a statistically considerable relationship between them without manipulating them, for example, the relationship between diet and anxiety. Unlike experimental research, which is fully based on scientific

technique and hypothesis, this sort of study is descriptive, in nature, descriptive research could be either quantitative or qualitative. This kind of research involves quantitative data that can be collated in numerical form, like test scores or the amount of times an individual use a specific feature of a multimedia program, or it can explain categories of data, like gender or patterns of communication while using technology in a group setting, and Causal-Comparative/Quasi-Experimental Research These kind of research attempts to identify cause-and-effect relationships between the variables which are extremely similar to actual experiments but with few important distinctions (Ghanad, 2023).

The research adopted a quantitative approach, focusing on analysing the relationship between natural environment and childhood resilience and comparing boys and girls regarding these variables.

3.2 Population and Sample

The population usually is described as Target population which is also called the universe, is composed of entire group of people or objects to which the researcher wishes to generalize the findings of a study, target population consists of people or things that meet the designated set of criteria of interest to researcher (“Population, Sample, and Sampling,” n.d.). In this study late childhood was the population.

The sample represents the population of those critical characteristics you plan to study. In other words, if the sample is representative of the population, you can say that what you have found out about the sample is true of the population. The term representative means that sample subjects are not selected haphazardly, but deliberately so that every element in the population has an equal chance of being selected for the study (“Population, Sample, and Sampling,” n.d.). In

this study the selected samples consist of 334 children enrolled in 5th, 6th, and 7th, standards, typically ranging in age from 10 to 12 years.

3.3 Sampling

The process of selecting a fraction of the sampling unit of your target population for inclusion in your study is called sampling ("Population, Sample, and Sampling," n.d.). This study employed a multistage sampling technique, where in convenience sampling was used to select the schools, followed by non-random stratified sampling to select the students. A convenience sample is a group of individuals who are readily available to participate in a study. That is, the choice of the sample is left completely to the convenience of the investigator. The cost involves in picking up the sample is minimum and the cost of data collection is also generally low. Stratified Random Sampling is a type of random sampling in which the population is first divided into two or more strata or subgroups, before sampling process begins. Each unit is assigned to one stratum based on prior knowledge about the unit. Then, independent random samples are selected from each stratum using a procedure which is used in simple random sampling ("Population, Sample, and Sampling," n.d.). But in this research, the students are non-randomly selected from each stratum based on their availability and interest. The selection of individuals or cases is also based on a predetermined set of criteria, which include characteristics such as age, gender, and grades.

3.3.1 *Inclusion and Exclusion criteria*

Inclusion Criteria:

- Children between 10–12 years old
- Upper primary school students in Grades 5-7
- Children residing in Thiruvananthapuram district of Kerala

Exclusion Criteria:

- Children for whom teacher consent was not granted for participation in the study
- Children who showed disinterest or expressed unwillingness to participate
- Children who submitted incomplete questionnaire
- Children who were in grade 5, 6, and 7, but who did not fall within age range of 10 to12 years.

3.4 Data Collection Method

The data was collected through structured questionnaire and was administered to the group of students by the researcher. A questionnaire, as described by Sreejesh (2014), is fundamentally a structured series of questions presented to respondents during an interview, accompanied by clear instructions detailing the sequence and selection criteria. This tool holds significant versatility across various research domains, encompassing survey research and experimental design, providing researchers with a structured framework to gather insights systematically for data collection and analysis. Opennheim (2001) outlines the multidimensional role of questionnaires in research. They serve as instruments for gathering and documenting information on specific topics of interest, with a focus on aligning the questionnaire's purpose with research objectives and ensuring clarity on the utilization of findings. Structured questionnaires primarily serve quantitative research needs, enabling the collection of numerical data across diverse survey formats such as postal, electronic, face-to-face, and telephone. These questionnaires, whether self-completed or administered by interviewers, play crucial roles in collecting information, understanding behaviours, gauging group attitudes, measuring customer satisfaction, and establishing baseline data for longitudinal analysis (Kuphanga, 2024).

3.5 Data Collection Tool

Child and Youth Resilience Measure-Revised (CYRM-R):

The Child and Youth Resilience Measure – Revised (CYRM-R) is a self-report tool designed to assess social-ecological resilience in children and youth. It is a revised version of the original CYRM developed as part of the International Resilience Project (IRP) at the Resilience Research Centre (RRC), which involved 14 communities across 11 countries. The revised CYRM-R was developed IN 2019 by Philip Jefferies, Ph.D., Lisa McGarrigle, Ph.D., and Michael Ungar, Ph.D. at the Resilience Research Centre

(Resilience Research Centre, 2019).

The CYRM-R is suitable for a wide age range: children aged 5–9, youth aged 10–23, and adults aged 18 or older, depending on the study's focus. For this study, the youth version was used, which is appropriate for participants aged 10–12 years. The measure was originally developed in English (Resilience Research Centre, 2019).

The CYRM-R consists of 17 positively worded items, which can be scored using either a 3-point or 5-point Likert scale. In the unmodified version:

- The 3-point scale has a total score range of 17–51
- The 5-point scale has a total score range of 17–85 (Resilience Research Centre, 2019).

Responses are summed to yield:

- An overall resilience score
- Two subscale scores:

1. Personal resilience: Items 1, 2, 3, 7, 9, 10, 12, 13, 14, 16

   (Score range: 10–30 for 3-point; 10–50 for 5-point)

2. Caregiver resilience: Items 4, 5, 6, 8, 11, 15, 17

   (Score range: 7–21 for 3-point; 7–35 for 5-point) (Resilience Research Centre, 2019).

Higher scores indicate greater resilience. The items are not reverse-coded, and all are equally weighted (Resilience Research Centre, 2019).

The CYRM-R can be administered individually or in groups. In group settings, the measure can be read aloud while responses are completed privately to promote honest reporting. The completion time ranges from 5 to 10 minutes, depending on participants' language proficiency, age, comprehension level, and whether additional items are included
(Resilience Research Centre, 2019).

For younger children or those with literacy challenges, pictorial scales may be used to facilitate comprehension. Options include:

- Thumbs up/down (Erb et al., 2017) for the 3-point scale
- Glasses of water (Panter-Brick et al., 2018) for the 5-point scale
- Smiley faces from happy to very happy (Hall et al., 2016), rather than neutral to happy, are preferred for full scale utilization (Resilience Research Centre, 2019).

The CYRM-R demonstrates strong psychometric properties. Internal consistency, as measured by Cronbach's alpha, is high for the overall resilience scale ($\alpha = .87$), as well as for the two subscales: personal resilience ($\alpha = .82$) and caregiver resilience ($\alpha = .82$) (Jefferies et al., 2018). The Person-Separation Index (PSI), which reflects the scale's ability to distinguish between individuals with different levels of resilience, was .74 for personal resilience and .71 for caregiver resilience. The CYRM-R subscales were also validated using Rasch analysis, confirming their uni-dimensionality, appropriate item fit, and lack of item bias or local dependency. These subscales effectively differentiate among individuals with varying resilience levels. Additionally, the scale

shows strong content and face validity, developed through culturally diverse input from 14 communities in 11 countries. Construct validity was supported through exploratory factor analysis (RMSEA = .059, RMSR = .55), while concurrent validity of earlier versions (CYRM-28) was established through positive correlations with self-esteem and acceptance, and negative correlations with PTSD and trauma. Although test-retest reliability data for the CYRM-R are not yet available, the CYRM-28 showed test-retest correlation coefficients of ≥ .70 over two-week and three-month intervals (Daigneault et al., 2013) (Resilience Research Centre, 2019).

Nature Exposure Scale (NES- II):

The Nature Exposure Scale-II (NES-II) is a revised version of the original Nature Exposure Scale (NES), and was developed by Carly Jane Wood (University of Essex), Nina Smyth (University of Westminster), and David Barron (Heriot-Watt University Malaysia) in 2019. This revision incorporates two additional items assessing nature exposure specifically during physical activity (PA), also known as green exercise (GE), to better capture nature exposure across various life contexts (Wood, Smyth, & Barron, 2019).

The NES-II includes six items, each scored on a 5-point Likert scale (1 = high/a great deal; 5 = low/not much), where higher scores represent greater exposure to nature. The scale focuses on behaviours that individuals are likely to control, such as noticing and choosing to be exposed to nature during every day and non-everyday environments, including PA

(Wood, Smyth, & Barron, 2019).

The NES-II is a self-report questionnaire that can be completed online or in paper form. The items ask respondents to reflect on their exposure to natural environments, including during physical activity. The scale was designed for use across a broad age range but is particularly suited to assessing nature exposure during childhood and adulthood retrospectively

(Wood, Smyth, & Barron, 2019).

Psychometric analysis of the NES-II demonstrated good internal consistency, with a Cronbach's alpha of .814 after removal of one poorly fitting item from the original scale. Exploratory and confirmatory factor analyses supported a unidimensional factor structure explaining 57.4% of the variance. The scale showed favourable fit indices after allowing for error covariance between certain items. The NES-II also showed significant correlations with psychological health outcomes such as reduced depression, anxiety, and stress, and increased connectedness to nature, self-esteem, and wellbeing, supporting its construct validity
(Wood, Smyth, & Barron, 2019).

3.6 Procedure of Data Collection

A structured questionnaire was used as the primary method of data collection. The instrument was designed to gather information related to Nature exposure and Resilience characteristics of children. The questionnaire included Likert-scale items. The questionnaire was administered directly to students in the 5th, 6th, and 7th standards of each of the five selected schools. A total of 20 students from each grade level per school participated, resulting in a sample of 334 students. The administration of the questionnaire took approximately 20 minutes per student group. Prior to administration, the purpose of the study was explained to the students, and appropriate ascent was obtained from students and consent was obtained from school authorities. while administering the questionnaires assistance was provided.

3.7 Data Analysis

Data Analysis is the process of systematically applying statistical and/or logical techniques to describe and illustrate, condense, and recap, and evaluate data. According to Shamoo and Resnik (2003) various analytic procedures "provide a way of drawing inductive inferences from data and

distinguishing the signal (the phenomenon of interest) from the noise (statistical fluctuations) present in the data" ("data analysis," n.d.).

Quantitative data analysis involves the use of statistics. Statistics will always analyze variables to help you make sense of numerical data drawn from a sample. This is where the raw data (numbers) become results or evidence. In most cases (if not all), data analysis begins with devising a clear analysis plan (or statistical analysis plan [SAP]) to ensure that statistics are aligned to the analyses required to help address the research questions that have been set in a given study (Kotronoulasa et al., 2023).

Statistics have two functions. First, statistics can be descriptive. Descriptive statistics generate summaries of the variables in a data set to show what is typical for the sample. Second, statistics can be inferential. Inferential statistics aid in exploring links between variables and making inferences. This means that depending on the nature of the research, statistics can be used to show whether a new treatment is effective, to investigate whether two or more variables might be related to one another, or to reveal how similar or different two samples might be. Importantly, inferential statistics also indicate whether an observed effect, relationship, or difference is a chance finding or it is likely to be true and existing in reality (Kotronoulasa et al., 2023).

Inferential Statistics was used, to test hypotheses to return a probability about whether or not a hypothesized effect, relationship, or difference is likely true. The null hypothesis (H0) was taken which states that there is no effect, relationship, or difference (Kotronoulasa et al., 2023). To determine the appropriate statistical tests, the normality of the data was first assessed using the Shapiro - Wilk test. The results indicated that the data were not normally distributed. Consequently, non-parametric statistical methods were employed for analysis. Spearman's rank correlation coefficient (Spearman's rho) was used to assess correlations between variables, while the Mann -

Whitney U test was applied to compare differences between groups. All statistical analyses were conducted using SPSS version 26, with a significance level set at $p < 0.05$.

3.8 Ethical Consideration

1. Voluntary and informed ascent was received from the participants.
2. Confidentiality and anonymity of the participants was maintained throughout the investigation.
3. The privacy of research participants was safeguarded.
4. The gathered data was utilized solely for research purposes.
5. Participant's right was maintained.

This chapter elucidates the comprehensive method of research approach adopted to assess the protective effects of natural environment on childhood resilience. The research design used the quantitative methodologies, utilizing structured questionnaires to gather data. Sampling techniques and inclusion/ exclusion criteria are outlined, followed by a detailed description of data collection tools and procedures. Statistical analyses such as Spearman's rank correlation coefficient and Mann - Whitney U test was employed for quantitative data. Ethical considerations underscored the commitment to voluntary participation, confidentiality, and respect for participant's right throughout the study.

CHAPTER IV

RESULT AND DISCUSSION

This chapter explores the presentation concerning obtained results also their analysis for the study “The protective effects of natural environment on childhood resilience.” The chapter begins with socio demographic details of the samples and it also highlights the findings and the analysis methods used in analysing the collected data. The discussion part of the chapter interprets and explain the significance of the result, where the tested hypotheses and findings are clearly discussed.

4.1 Socio - Demographic Details

Socio-demographics refer to a combination of social and demographic factors that define people in a specific group or population, which may include age, education, religion, employment, marital status, income levels, migration background, race, and ethnicity (Longe, 2025).

Table 1

The Sociodemographic Characteristics of Participants

Baseline characteristics	n	%
Gender		
Boy	176	52
Girl	158	47
Age level		
10	129	38
11	107	32
12	98	29

Note: Table 1 presents the sociodemographic characteristics of the participants. A total of 334 children participated in the study, comprising 176 boys (52%) and 158 girls (47%). Regarding age distribution, 129 children (38%) were 10 years old, 107 (32%) were 11 years old, and 98 (29%) were 12 years old.

4.2 Shapiro - Wilk Test

The Shapiro-Wilk Test is a statistical test used to determine whether a sample comes from a normally distributed population. Introduced by Samuel Shapiro and Martin Wilk in 1965, the test is particularly effective for small to medium-sized datasets (Thinker, 2025).

The Shapiro-Wilk Test evaluates the null hypothesis:

- H_0 (Null Hypothesis): The data are normally distributed.
- H_1 (Alternative Hypothesis): The data are not normally distributed.

A significant result (typically $p < 0.05$) suggests that the data deviate from normality (Thinker, 2025).

Table 2

Test of Normality

Variables	Shapiro - wilk		
	Statistic	df	Sig.
TOTAL CYRM - R	.852	334	.000
PERSONAL	.871	334	.000
CAREGIVER	.739	334	.000
TOTAL NES - 2	.958	334	.000
NES EVERY	.894	334	.000
NES EX	.894	334	.000
NES PA	.908	334	.000

Note: Table 2 presents the results of the Shapiro-Wilk test conducted to assess the normality of seven variables: (1) Total Child and Youth Resilience Measure–Revised (TOTAL CYRM - R), (2) Personal subscale of the Child and Youth Resilience Measure–Revised, (3) Caregiver subscale of the Child and Youth Resilience Measure–Revised, (4) Total Nature Exposure Scale – II (TOTAL NES - 2), (5) Nature Exposure During Everyday Activities (NE EVERY), (6) Nature Exposure During Excursions (NE EX), and (7) Nature Exposure During Physical Activity (NE PA). The results indicate that all variables significantly deviate from a normal distribution, as evidenced by a Shapiro-Wilk p-value of .000 for each variable. Consequently, the assumption of normality is violated. Therefore, non-parametric statistical methods are deemed more appropriate for subsequent data analyses.

4.3 Spearman's Rank Correlation Coefficient

The Spearman rank correlation examines the relationship between two variables, being the non-parametric counterpart of Pearson's correlation. Therefore, in this case, a normal distribution of the data is not required. There is an important difference between the two correlation coefficients! Spearman correlation uses the ranks of the data rather than the original data, hence the name rank correlation (DATAtab Team, 2025).

Table 3

Correlation between The Variables Total Child and Youth Resilience Measure- Revised and Total Nature Exposure Scale-II (N= 334)

	TOTAL CYRM - R	TOTAL NES - 2
TOTAL CYRM - R	-	.397**
TOTAL NES - 2	.397**	-

**. Correlation is significant at the 0.01 level (2-tailed).

Note: Table 3 presents the results of Spearman's rank correlation coefficient analysis conducted to examine the relationship between the Total Child and Youth Resilience Measure - Revised (TOTAL CYRM-R) and the Total Nature Exposure Scale – 2 (TOTAL NES - 2). The analysis revealed a statistically significant correlation between the two variables (Spearman's rho = .397, $p < .001$). As a result, the null hypothesis ($H0_1$), which stated that there is no relationship between exposure to natural environments and overall childhood resilience, is rejected, indicating there is a relationship between exposure to natural environment and childhood resilience.

Table 4

Correlation between The Variables Total Nature Exposure Scale-II and Personal subtest in Child and Youth Resilience Measure-Revised (N= 334)

	TOTAL NES - 2	PERSONAL
TOTAL NES - 2	-	.396**
PERSONAL	.396**	-

**. Correlation is significant at the 0.01 level (2-tailed).

Note: Table 4 presents the results of Spearman's rank correlation coefficient analysis conducted to examine the relationship between the Total Nature Exposure Scale – 2 (TOTAL NES - 2) and Personal subscale of the Child and Youth Resilience Measure – Revised (PERSONAL). The analysis revealed a statistically significant correlation between the two variables (Spearman's rho = .396, $p < .001$). As a result, the null hypothesis ($H0_2$), which stated that greater exposure to natural environments does not relate to personal resilience in children, is rejected, indicating greater exposure to natural environments was significantly related to personal resilience in children.

Table 5

Correlation between The Variables Total Nature Exposure Scale- II and Caregiver subtest in Child and Youth Resilience Measure- Revised (N= 334)

	TOTAL NES - 2	CAREGIVER
TOTAL NES - 2	-	.293**
CAREGIVER	.293**	-

**. Correlation is significant at the 0.01 level (2-tailed).

Note: Table 5 presents the results of Spearman's rank correlation coefficient analysis conducted to examine the relationship between the Total Nature Exposure Scale – 2 (TOTAL NES - 2) and Caregiver subscale of the Child and Youth Resilience Measure – Revised (CAREGIVER). The analysis revealed a statistically significant correlation between the two variables (Spearman's rho = .293, $p < .001$). As a result, the null hypothesis ($H0_3$), which stated that greater exposure to natural environments does not relate to caregiver – related resilience in children, is rejected, indicating greater exposure to natural environments was significantly related to caregiver – related resilience in children.

Table 6

Correlation between The Variables Total Child and Youth Resilience Measure- Revised and Nature Exposure during Everyday life (N= 334)

	TOTAL CYRM - R	NE EVERY
TOTAL CYRM - R	-	.293**
NE EVERY	.293**	-

**. Correlation is significant at the 0.01 level (2-tailed).

Note: Table 6 presents the results of Spearman's rank correlation coefficient analysis conducted to examine the relationship between the Total Child and Youth Resilience Measure - Revised (TOTAL CYRM-R) and Nature exposure during every day activities (NE EVERY). The analysis revealed a statistically significant correlation between the two variables (Spearman's rho = .293, $p < .001$). As a result, the null hypothesis ($H0_4$), which stated that there is no relationship between nature exposure during everyday life, nature exposure during excursion, nature exposure during physical activity towards childhood resilience, is rejected, indicating that nature exposure during every day activities was significantly related to overall resilience in children.

Table 7

Correlation between The Variables Total Child and Youth Resilience Measure- Revised and Nature Exposure during Excursion (N= 334)

	TOTAL CYRM - R	NE EX
TOTAL CYRM - R	-	.297**
NE EX	.297**	-

**. Correlation is significant at the 0.01 level (2-tailed).

Note: Table 7 presents the results of Spearman's rank correlation coefficient analysis conducted to examine the relationship between the Total Child and Youth Resilience Measure - Revised (TOTAL CYRM-R) and Nature exposure during excursion (NE EX). The analysis revealed a statistically significant correlation between the two variables (Spearman's rho = .297, $p < .001$). As a result, the null hypothesis (H04), which stated that there is no relationship between nature exposure during everyday life, nature exposure during excursion, nature exposure during physical

activity towards childhood resilience, is rejected, indicating that nature exposure during excursion was significantly related to overall resilience in children.

Table 8

Correlation between The Variables Total Child and Youth Resilience Measure- Revised and Nature Exposure during Physical activity (N= 334)

	TOTAL CYRM - R	NE PA
TOTAL CYRM - R	-	.303**
NE PA	.303**	-

**. Correlation is significant at the 0.01 level (2-tailed).

Note: Table 8 presents the results of Spearman's rank correlation coefficient analysis conducted to examine the relationship between the Total Child and Youth Resilience Measure - Revised (TOTAL CYRM-R) and Nature exposure during physical activity (NE PA). The analysis revealed a statistically significant correlation between the two variables (Spearman's rho = .303, $p < .001$). As a result, the null hypothesis (H04), which stated that there is no relationship between nature exposure during everyday life, nature exposure during excursion, nature exposure during physical activity towards childhood resilience, is rejected, indicating that nature exposure during physical activity was significantly related to overall resilience in children.

4.4 Mann - Whitney U Test

The Mann-Whitney U-test, also known as the Wilcoxon rank-sum test is a non-parametric hypothesis test used to assess the difference between two independent samples of continuous data. It compares the distributions of two independent groups to check whether one group tends to have

higher or lower values than the other. It works by ranking all observations from both groups together and then evaluating whether these ranks differ significantly

(Mann and Whitney U test, 2025).

Table 9

Gender Difference of The Variables Total Child and Youth Resilience Measure- Revised and Total Nature Exposure Scale-II

	GENDER				
	Boy		Girl		Decision
Variables	M	SD	M	SD	
TOTAL CYRM - R	75.16	9.745	76.89	7.192	Retain the null hypothesis
TOTAL NES - 2	23.32	4.731	23.88	3.957	Retain the null hypothesis

Note: Table 9 presents the mean and standard deviation of scores on the Total Child and Youth Resilience Measure - Revised (TOTAL CYRM-R) and the Total Nature Exposure Scale - 2 (TOTAL NES-2) for both male and female participants. For the CYRM-R, boys had a mean score of 75.16 (SD = 9.75), while girls had a mean score of 76.89 (SD = 7.19). Regarding the NES-2, boys had a mean score of 23.32 (SD = 4.73), and girls had a mean score of 23.88 (SD = 3.96). Although differences were observed in the mean scores between boys and girls on both measures,

statistical analysis revealed that these differences were not significant. Therefore, the null hypothesis ($H0_5$), which states that there is no difference between boys and girls in exposure to the natural environment and childhood resilience, was retained.

The following areas are going to be discussed:

- The speciality of the sample selected
- The relationship between exposure to natural environment and childhood resilience
- The relationship between exposure to natural environment and personal resilience
- The relationship between exposure to natural environment and caregiver resilience
- The relationship between childhood resilience and environmental exposure during everyday activities
- The relationship between childhood resilience and environmental exposure during excursion
- The relationship between childhood resilience and environmental exposure during physical activity
- Why there is no gender difference in exposure to natural environment and childhood resilience

Late childhood from the period of 10 to 12 years was the most critical stage where the children develop resilience, the ability of an individual to bounce back. The period was bounded by significant psychological and developmental transitioning in to adolescence, the child navigates through the challenges like academic stress, peer relationships, and family changes, which enhance the development of resilience and thereby promoting positive adjustment and preventing mental health issues.

Table 3 shows the significant relationship (Spearman's rho = .397, $p < .001$) between child and youth resilience measure - revised and nature exposure scale – II, which indicate that exposure to natural environment was related to childhood resilience. It may also reflect that the higher the exposure to natural environment the higher the enhancement of childhood resilience. It was also aligned with the concept of 'Attention Restoration Theory' was first described by Rachel and Stephen Kaplan in their 1989 book published in 'The experience of nature: A psychological perspective'. This is the theory that spending time in nature has a uniquely restorative effect on us, both cognitively and mentally. It suggests that the mere action of spending time in the countryside, walking in a forest, sitting in a park, watching the sunset, or even just looking out the window at a green space provides us with the opportunity to rest, reflect and restore the resources that we require to cope with everyday life (Asher, 2023).

Table 4 shows the significant relationship (Spearman's rho = .396, $p < .001$) between nature exposure scale – II and personal resilience in children, which indicate that the exposure to natural environment was related personal resilience in children. Personal resilience refers to the internal strengths and coping abilities of a child, encompassing both intrapersonal and interpersonal dimensions. It may be because nature promotes emotional regulation, encourage autonomy and confidence, enhance attention and cognitive flexibility, strengthens positive identity and meanings, and facilitates self – reflection. Natural settings are calming and soothing, regular exposure to it may reduce stress was mentioned by Corraliza, Collado, and Bethelmy (2012), in their study Nature as a Moderator of Stress in Urban Children, the findings indicated that children with more access to natural areas, as well as more perceived nature in the home and school environment, had lower stress levels. This study highlights the moderating role of natural environments in reducing stress among children in urban contexts (Corraliza, Collado, & Bethelmy, 2012), this was most

appropriate because most of the samples are collected from urban and semi – urban areas. Along with stress regular exposure may help to reduce anxiety and negative emotions, helping the children to regulate their feelings. Nature – based activities like climbing trees, exploring trails, etc. may often require children to make decisions, take risks, and solve problems which may build self-confidence and a sense of mastery. According to "Attention Restoration Theory" (Kaplan & Kaplan, 1989) spending time in nature has a uniquely restorative effect on us, both cognitively and mentally, which indicate that exposure to nature may help to restore attentional resources and cognitive flexibility. In nature children may often feel sence of wonder, peace and connection which can contribute to a positive self-image and a deeper sense of purpose particularly when cultural and spiritual elements are involved, and it was more emphasised in the Indian context. Also, the quite natural space allows children to reflect on their thoughts and feelings without distraction.

Table 5 shows the significant relationship (Spearman's rho = .293, $p < .001$) between exposure to natural environment and caregiver related resilience in children. caregiver resilience pertains to the qualities of significant relationships in a child's life, particularly with a primary caregiver, family member, or other close relational figure, which provide emotional security, support, and stability. Mesman, Vreeker, and Hillegers (2021) in their study "Resilience and mental health in children and adolescents: an update of the recent literature and future directions" emphasize the importance of understanding resilience to better promote optimal psychological development. A key theme emerging from the review is the multisystemic nature of resilience. Resilience is not confined to individual traits but is influenced by a range of interconnected systems, including social, cultural, familial, and individual factors (Mesman, Vreeker, & Hillegers, 2021). The relationship between caregiver related resilience and natural environment is may be due to nature

provide a space for caregivers and children to spent time together through activities like walking, gardening, playing etc. which enhance open communication, shared emotional regulation, strengthens the attachment, and increases positive caregiving behaviours.

Table 6 shows the significant relationship (Spearman's rho = .293, $p < .001$) between childhood resilience and environmental exposure during every day activities. It may be due to daily exposure to natural elements like walking under a tree, playing in gardens, or seeing greenery provide frequent calming and grounding experience that help children to manage daily stressors and foster emotional stability. When nature is part of daily routines children may begin to internalize it as a safe, comforting, and accessible space for stress relief, reflection, or play which promote the use of healthy coping strategies. These small repeated acts build competence, independence, and problem-solving abilities. Neighbourhood green space and outdoor play areas are natural hubs for peer interaction, fostering social skills, friendships, and community support which promotes childhood resilience.

Table 7 shows the significant relationship (Spearman's rho = .297, $p < .001$) between childhood resilience and environmental exposure during excursion. Excursion would include trips you make in your leisure time (or occasionally as part of your study, work, or social activities) to nature-rich environments in urban, rural or wilderness areas. These might be places that you travel to once a week, or less frequently, either for the express purpose of being in the natural environment or for some other main purpose. Which expose to new and unfamiliar environments, requiring them to adapt, explore, and problem solve. Also, it may offer a break from everyday stressors, especially for children facing difficult home or school environments. Nature excursions often become emotionally meaningful and memorable, especially when associated with joy and wonder, these emotional memories act as a psychological resources children can draw upon in difficult times,

which reinforce their sense of optimism and hope. Also, group nature excursions like school field trip and family outings often involve shared activities that require cooperation, communication and mutual support which improves social skills and sense of connectedness.

Table 8 shows the significant relationship (Spearman's rho = .303, $p < .001$) between childhood resilience and environmental exposure during physical activity. Physical activity in natural environment (called Green Exercise) might include activities such as walking, gardening, fishing, jogging, or cycling. These physical activities could be conducted as part of, or coincidental to an everyday activity, or be a planned period of exercise. They might take place in urban, rural or wilderness areas. Among the three areas natural exposure during physical activity was strongly related to childhood resilience it may be because physical activity already boosts resilience by improving mood, reducing anxiety, and increasing self-confidence, when this activity happens in nature, the combined effect of exercise and natural exposure magnifies these benefits. Along with enhancing along with enhancing children's emotional regulation, autonomy, and independence the shared outdoor physical activity may promote social bonding and team work.

Table 9 shows the mean and standard deviation of the variables for both boys and girls. There is a difference in mean scores but it was not statistically significant, which indicate that there is no marked gender difference in exposure to natural environment and childhood resilience this may be because the changing social norm regarding gender especially in Kerala. Kerala is known for its progressive stance on gender equality, especially in education. Schools often encourage equal participation in extracurricular activities that include outdoor or nature-based learning, also school based environmental awareness programs and initiatives like eco club promote the equal participation of both boys and girls. Also, the higher parental education levels may contribute to gender equitable parenting styles that leads to the equal contribution of the resources for the

development of resilience from parents to children. There is a strong support from the sociocultural norms that do not restrict children from any gender to explore nature especially before adolescents. Extended family structures and community-based child rearing practices often seen in Kerala may provide each child nurturing environments that foster adaptive coping regard to gender differences.

CHAPTER V

SUMMARY AND CONCLUSION

The summary and conclusion section of the research serves as the culmination of how exposure to natural environment was related to childhood resilience. The section encapsulates the core findings and conclusion offering sufficient overview of the research journey and its implications, limitations, and suggestions for further research.

5.1 Summary

The first chapter was Introduction, which explored the foundational framework of the study, which investigates the relationship between exposure to natural environments and childhood resilience. It introduced key theoretical and operational definitions of natural environment, childhood resilience, and late childhood. The background section discussed how natural settings positively influence children's psychological, emotional, and cognitive development, especially in the face of adversity. Grounded in the Attention Restoration Theory, the study highlights the restorative effects of nature on children's attention, emotional regulation, and coping abilities. The need and significance section emphasized the relevance of this research across education, mental health, urban planning, and environmental policy. It underscored the importance of integrating nature-based approaches in child development and trauma recovery. The problem statement identified a gap in understanding how nature specifically contributes to different dimensions of childhood resilience both personal and caregiver-based. The objectives laid out the study's goals, including examining the nature-resilience relationship, types of nature exposure, and potential gender differences in experiences.

Chapter II of the research provides an extensive review of existing literature on two core constructs: childhood resilience and exposure to the natural environment, and explores their interconnected roles in promoting mental health, well-being, and development in children. The literature encompasses global perspectives with a particular focus on Indian and rural contexts,

highlighting both individual and environmental influences on resilience. Research on childhood resilience emphasizes it as a dynamic interaction between internal traits (like emotional regulation, cognition, and temperament) and external supports (such as family, peers, educators, and community). Multiple studies confirm that resilience contributes positively to children's mental health and serves as a buffer against adverse life experiences, including poverty, trauma, and psychosocial stressors. Indian studies further establish the role of early home environments and culturally adapted programs in fostering resilience, particularly in disadvantaged or clinical populations. Parallelly, the chapter reviews literature linking nature exposure to psychological and emotional benefits in children. Studies demonstrate that contact with natural environments can reduce stress, improve self-esteem, and enhance overall well-being. These benefits are evident across diverse settings, including urban, rural, and disaster-affected areas. Nature is presented not only as a source of calm and healing but also as a developmental and psychological asset. The chapter concludes by identifying a critical gap in integrated studies that simultaneously examine resilience and nature exposure especially among late childhood populations in the Indian context. This gap forms the basis for the current research, which investigates how different forms of nature exposure influence both personal and caregiver-related aspects of resilience in children.

Chapter III detailed the methodology used to investigate the protective effects of natural environments on childhood resilience. The research adopted a quantitative design, employing structured questionnaires to collect data from 334 students aged 10–12 years, selected through multistage sampling from upper primary schools in Thiruvananthapuram district. Two standardized tools were used: the Child and Youth Resilience Measure – Revised (CYRM-R) to assess resilience and the Nature Exposure Scale-II (NES-II) to measure exposure to natural environments. The data collection involved direct administration of the questionnaires in

classroom settings, following informed consent from schools and ascent from students. Non-parametric statistical methods (Spearman's correlation and Mann-Whitney U test) were applied, as the data were not normally distributed. Ethical standards were strictly followed, including voluntary participation, confidentiality, and data privacy. This chapter laid the foundation for reliable and valid analysis by ensuring rigorous methodological planning and adherence to research ethics.

Chapter IV presents the results and discussion of the study on the protective effects of natural environments on childhood resilience. It begins by outlining the socio-demographic characteristics of the 334 child participants, aged 10 to 12 years. The chapter reports the use of appropriate non-parametric statistical analyses due to the non-normal distribution of the data. Key findings show significant correlations between children's exposure to natural environments and their overall resilience, including personal and caregiver-related resilience. Also, different types of nature exposure during everyday activities, excursions, and physical activities were all significantly associated with higher resilience levels. The discussion interprets these findings considering existing theories such as the Attention Restoration Theory and highlights the role of nature in reducing stress, enhancing emotional regulation, and promoting social bonding. Finally, the chapter addresses the lack of significant gender differences in nature exposure and resilience, attributing this to sociocultural factors and gender-equitable practices prevalent in the study setting.

5.2 Major Findings

1. The study found a correlation between children's exposure to natural environments and their overall resilience.
2. Exposure to natural environments was significantly linked not only to children's personal resilience but also to caregiver-related resilience.
3. Nature exposure during everyday activities, excursions, and physical activities all showed significant relationships with childhood resilience, with physical activity in nature showing the strongest correlation.
4. The study revealed no significant gender differences in levels of natural environment exposure or childhood resilience.

5.3 Conclusion

This study highlights the relationship between exposure to natural environment and childhood resilience. Different type of natural exposure like nature exposure during every day activities, excursion and physical activity was significantly related to both personal resilience and caregiver – related resilience. The study also reveals that there is no gender difference in exposure to natural environment and childhood resilience.

5.4 Implications of The Study

The results have real-world uses in educational environments. Schools can gain knowledge on how natural areas, such as outdoor classrooms, school gardens, or local parks, improve social skills, focus, and emotional control. This study encourages educational institutions to include environmental access in their well-being plans, supporting a more comprehensive approach to child development.

The study influences environmental design and urban planning initiatives that attempt to make cities kid-friendly. It highlights how important it is for everyone to have fair access to green areas, especially in underprivileged or crowded areas. Planners and legislators can more effectively prioritize green infrastructure in urban development by emphasizing the role that nature plays in fostering psychological resilience.

There are significant ramifications for mental health therapies when examining childhood resilience through the lens of environmental exposure. Particularly for kids who have experienced trauma, stress, or unfavourable life events, nature-based therapies and eco-therapeutic techniques are showing promise as approaches to mental health treatment. This study offers empirical evidence in favour of incorporating natural settings into therapy models, which could revolutionize the way professionals handle preventative care and mental health issues in children.

The study emphasizes the significance of nature as a calming and healing agent for children exposed to crises in the context of trauma-informed treatment and catastrophe recovery. Including natural components in recovery programs can help with community reconstruction and emotional healing, providing a low-cost, easily available resource to support trauma recovery.

The study advances the more general objectives of environmental activism and sustainable development. In addition to encouraging healthier people, showing kids, the psychological advantages of nature also create a generation that is more bonded to and inclined to preserve the environment. This promotes environmental stewardship throughout generations and is consistent with international sustainability objectives.

From a disciplinary perspective, the study enhances environmental psychology and travel psychology by illuminating the ways in which nature-based experiences impact kids' emotional resilience. Additionally, it lends credence to the expanding area of nature-based counselling by

providing proof that natural environments can play a crucial role in providing psychological support.

This study highlights the multidisciplinary significance of acknowledging nature as a crucial component in fostering childhood resilience by bridging several domains, including psychology, education, urban planning, public health, and environmental science.

5.5 Limitations of The Study

Notwithstanding the noteworthy results, it is important to recognize the following limitations of this study:

The study's cross-sectional research approach makes it difficult to determine a direct link between resilience in children and exposure to natural settings. Stronger proof of causality would come from experimental or longitudinal designs.

Self-reported surveys, which are prone to social desirability bias, recall problems, and limited insight particularly when working with children aged 10–12 were used to gather the data. Kerala's urban and semi-urban areas made up most of the sample. Because of this, the results could not apply to kids from rural areas or other cultural contexts where access to and views of nature vary.

Younger children or adolescents who might react differently to natural exposure were not included in the study because it only looked at youngsters between the ages of 10 and 12.

Although they were not under control, variables like parental mental health, school climate, digital screen time, and socioeconomic position may have an impact on resilience and exposure to natural environment.

All the data used in the investigation were quantitative. A more comprehensive, contextual knowledge of children's experiences with nature could have been obtained through in-depth qualitative interviews or a mixed-methods approach.

5.6 Suggestions for Further Research

More varied and reliable methodological approaches can be used in future studies on the connection between childhood resilience and the natural environment. To more clearly demonstrate the causal links between exposure to nature and the gradual development of resilience, longitudinal or experimental designs are advised. The generalizability of the results might be improved by broadening the demographic reach to include children from rural locations, diverse cultural backgrounds, and a wider range of ages. Multiple informants, such as parents, teachers, or other caregivers, could be included to lessen the biases included in self-reported data and offer a more thorough view of the child's resilience. Additional research might examine the distinct effects of various natural habitats (such as parks, woods, and coastal regions) and nature engagement patterns (organized versus unstructured) on resilience. Furthermore, studies that focus on interventions, like nature therapy or outdoor education initiatives, may provide useful information about how nature-based approaches might actively promote resilience. Last but not least, including qualitative techniques like interviews, illustrations, or photo-voice would offer deeper, more complex insights on kids' individual encounters with nature and coping mechanisms, advancing our knowledge of the natural environment's protective function.

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Appendices

Appendix A. Ascent Form

Project Title

"Assessing the Protective Effects of Natural Settings on Childhood Resilience"

Hello!

My name is -----, and I am studying MSc Counselling Psychology at -----. I am doing a project to understand how being in nature (like parks, gardens, trees, and natural places) can help children feel stronger, braver, and better at handling hard times, as part of my course. It is supervised by ----- (-----, MSc Counselling Psychology, -----).

I am inviting children between the ages of 10 to 12 years to help me by filling out a fun and simple questionnaire. There are no right or wrong answers, and you can choose what feels right for you.

Before We Start, Please Know:

- You can choose if you want to take part.
- You can stop anytime you want — no problem at all.
- Your answers will be kept private.
- The questions take about 10–15 minutes.
- You can ask for help at any time.

Do You Want to Take Part?

Please write your name and tick the box below if you agree to take part:

My Name: _____

☐ Yes, I want to take part in this activity. I understand it and I am happy to answer the questions.

Your Signature (or Draw Your Name): _____

Date: ___ / ___ / 2025

_____

Thank You!

Appendix B. Sociodemographic Sheet

Thank you for helping with this project! Your answers will help us understand how nature helps children grow strong and feel good.

With kind wishes,

MSc Counselling Psychology

Please tell us a little bit about yourself. You can ask an adult for help if needed!

1. Your Name (optional): _____

2. How old are you? _____ years

3. Are you a: ☐ Boy ☐ Girl ☐ Prefer to self-describe: _____

☐ Prefer not to say

4. Which class/grade are you in? _____

5. What kind of school do you go to?

☐ Government ☐ Private ☐ Aided

Appendix C. Child and Youth Resilience Measure-Revised (CYRM-R)

Instructions:

Please read each question carefully. For each question, choose the glass that best shows how you feel and tick ✅ on that column. If you need help, ask me.

Questions	Response				
	(Empty glass)	 (A little water)	 (Half-full)	 (Almost full)	 (Full glass)
1. I get along with people around me					
2. Getting an education is important to me					
3. I know how to behave/act in different situations (such as school, home, and church)					
4. My parent(s)/ caregiver(s) really look out for me					

5. My parent(s)/ caregiver(s) know a lot about me (for example, who my friends are, what I like to do)					
6. If I am hungry, there is enough to eat					
7. People like to spend time with me					
8. I talk to my family/ caregiver(s) about how I feel (for example when I am hurt or sad)					
9. I feel supported by my friends					
10. I feel that I belong/belonged at my school					
11. My family/caregiver(s)					

care about me when times are hard (for example if I am sick or have done something wrong)					
12. My friends care about me when times are hard (for example if I am sick or have done something wrong)					
13. I am treated fairly in my community					
14. I have chances to show others that I am growing up and can do things by myself					
15. I feel safe when I am with my family/caregiver(s)					

16. I have chances to learn things that will be useful when I am older (like cooking, working, and helping others)					
17. I like the way my family/ caregiver (s) celebrate things (like holydays or learning about my culture)					

Appendix D. Nature Exposure Scale (NES- II)

We are interested in your exposure to nature, both in your everyday life and activities, and when you take yourself on excursions outside of your everyday environments. We are also interested in your use of natural environments for physical activity. Please complete the following questions to reflect your *current* level of exposure to natural environments and participation in physical activity within these environments.

These 'natural environments' could be in urban (city parks for example) or rural areas. They could include things such as plants and animals (native or non-native), natural geography (e.g., hills, mountains, deserts, beaches, marshlands), natural water courses and waterscapes (e.g., rivers, streams, lakes, ponds, and ocean). Having a view which includes these types of natural environments is also relevant. This is in contrast to the so called 'built environment' of houses, buildings, roads and all other such structures created by humans.

Nature Exposure in Your Everyday Life and Environments

Item 1: In your everyday home, travel and work environments and activities, please rate your level of exposure to natural environments (please circle a number)

5 ——————————— 4 ——3 ——————————— 2 —— 1

High	Medium	Low
Most of my everyday environment is natural	About half of my everyday environment is natural	Very little of my everyday environment is natural

Item 2: How much do you notice the natural environments in your everyday life (please circle a number)?

5	4	3	2	1
A great deal		Somewhat		Not much

Nature Exposure during Excursions OUTSIDE of Everyday Life Environments

These questions relate to your level of exposure to nature when you are outside your everyday environments. This would include trips you make in your leisure time (or occasionally as part of your study, work, or social activities) to nature-rich environments in urban, rural or wilderness areas. These might be places that you travel to once a week, or less frequently, either for the express purpose of being in the natural environment or for some other main purpose.

Item 3: Please rate the frequency (how often) of exposure to nature-rich environments outside your everyday environment (please circle a number)

5	4	3	2	1
High		Medium		Low
Once a month or less	Once every 6 months	Once a year or less		more often

Item 4: How much notice would you take of the nature in these environments (please circle a number)?

5 ——————————— 4 ——— 3 ——————————— 2 ——— 1

A great deal Somewhat Not much

Nature Exposure during Physical Activity

These questions relate to your level of exposure to nature when you are engaging in physical activity. Physical activity in natural environment (called Green Exercise) might include activities such as walking, gardening, fishing, jogging, or cycling. These physical activities could be conducted as part of, or coincidental to an everyday activity, or be a planned period of exercise. They might take place in urban, rural or wilderness areas.

Item 5: Please rate the frequency (how often) in which you perform physical activity in nature-rich environments (please circle a number)

5 ————— 4 ——— 3 ——————————— 2 ——— 1

High Medium Low

Weekly Once every 6 months Once a year or less

Item 6: How much notice would you take of the nature when you are performing physical activity (please circle a number)?

5 ——————————— 4 ——— 3 ——————————— 2 ——— 1

A great deal Somewhat Not much