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The Effect of Eco-Therapy Intervention on Children's Fantasy and Aggression Among Early School-Aged Children

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ABSTRACT

A survey of over 46,000 participants in India found that 61% of urban parents noticed excessive social media use in their children, leading to aggression, impatience, and reduced attention spans (New Indian Express, 2023). This phenomenon, linked to "Nature-Deficit Disorder," highlights the crucial role of nature in fostering cognitive, emotional, and motor development in children (Louv, 2008; WHO, 2021). The aim of the present study was to explore the impact of Ecotherapy on Children's Fantasy and Aggression among early school aged children. The study employed a Quasi Experimental pre-test and post-test, experimental control group Design. A sample of 8-9-year-old children from a school in Pune, Maharashtra, was selected through purposive sampling. The study used the Children's Fantasy Inventory (CFI) and the Reactive-Proactive Aggression Scale (RPQ) to assess fantasy and aggression, respectively. The tests were translated into Marathi and administered through paper and pencil means. The study hypothesized that children in the experimental group would show significant increases in fantasy and reductions in aggression compared to the control group. The intervention lasted 7 days, with the experimental group participating in activities such as nature walks and nature art, while the control group engaged in regular activities. Data were analysed using JASP software (Version 0.19.1). Descriptive statistics and Mann-Whitney U tests were conducted to compare gain scores on fantasy and aggression between the two groups. The findings indicated that the experimental group had higher gain scores on children's fantasy, with a mean of 1.575 and a standard deviation (SD) of 8.233, as compared to the control group, which had a mean of 0.850 and an SD of 12.563. The findings indicated that the experimental group had lower gain scores on aggression, with a mean of -2.756 and a standard deviation (SD) of 5.864, as compared to the control group, which had a mean of -2.050 and an SD of 8.776. However, the results were not statistically significant, with a p-value of 0.600 on Children's Fantasy and 0.795 on Aggression.
Thus, this study contributes to future research targeted at examining the long-term impacts of ecotherapy on child development and offers important preliminary insights into the short-term impact of ecotherapy on children's fantasy and aggression.

Keywords: Children's Fantasy, Aggression, Ecotherapy

In recent years, the growing phenomenon of urbanization has significantly reduced children's daily interactions with nature. This shift is particularly concerning during early childhood, a critical period for

cognitive, social-emotional, and motor development. Natural environments provide essential stimuli that foster creativity, improve attention spans, and support healthy emotional development. Research indicates that exposure to natural settings during formative years has lasting benefits into adulthood, positively influencing mental health and overall well-being (World Health Organization, 2021).

The disconnection from nature has been conceptualized as "Nature-Deficit Disorder," a term introduced by Richard Louv (2008) to describe the physical and psychological consequences of reduced exposure to nature. This phenomenon is particularly prevalent in urban settings, where children are more likely to engage in indoor activities, leading to higher levels of aggression, hyperactivity, and shorter attention spans. Despite the widespread awareness of these effects, children's engagement with nature has declined steadily in many parts of the world, including India.

Ecotherapy

Ecotherapy is defined as a therapeutic approach that involves interaction with nature to promote healing and well-being, emphasizing the psychological benefits derived from nature-based experiences (Buzzell & Chalquist, 2009). Ecotherapy is a nature-based therapeutic practice that seeks to restore individuals' mental and emotional health by fostering a connection with the natural environment, incorporating various modalities such as horticultural therapy, wilderness therapy, and animal-assisted therapy (Chalquist, 2009) Ecotherapy refers to the use of nature as a form of treatment for mental health issues, grounded in the belief that reconnecting with the environment can enhance psychological resilience and foster personal growth Summers, J. K., Smith, L. M., Case, J. L., & Linthurst, R. A. (2018). Ecotherapy is conceptualized as an approach that utilizes the healing properties of nature to address mental health challenges, promoting the idea that spending time in natural settings can lead to improved emotional and psychological well-being (Pedretti-Burls, 2007).

The Role of Ecotherapy in Addressing Children's Fantasy and Aggression

Ecotherapy, a therapeutic approach that emphasizes reconnecting with nature, has been increasingly recognized for its potential to mitigate the effects of Nature-Deficit Disorder. By incorporating elements of nature into therapeutic settings, ecotherapy can enhance creativity, reduce stress, and promote emotional well-being. Ecotherapy has been shown to have promising results in fostering imaginative play and reducing behavioral issues, including aggression, among children (American Society of Landscape Architects, n.d.). However, the specific relationship between ecotherapy and children's fantasy behavior—particularly imaginative play—and its impact on aggression is not well understood, particularly in non-Western cultural contexts such as India.

Despite existing research on ecotherapy's benefits in fostering creativity and enhancing psychological well-being, there is a significant gap in studies focusing on its impact on children's fantasy behavior and aggression. While previous research conducted in Western contexts has acknowledged ecotherapy's benefits, limited attention has been given to these effects in Indian settings, where children's experiences with nature and play are culturally distinct. Moreover, although numerous studies have highlighted the role of biophilia (the innate human affinity for nature) in promoting positive mental health outcomes, few studies have examined its mediating role between children's fantasy behavior and aggression. Adler (2009) posits that biophilia can reduce aggressive tendencies, but the extent to which biophilia enhances fantasy behavior while mitigating aggression remains unexplored. Additionally, existing studies primarily focus on expensive or spatially challenging interventions, such as biophilic gardens, which are impractical for

many educational settings. This study seeks to explore more feasible and cost-effective alternatives, such as nature walks and digital nature sounds, making ecotherapy more accessible to a broader population. This research continues the tradition of exploring nature-based therapeutic interventions, but with a distinct focus on children's fantasy behavior and aggression in the Indian context. It aims to provide culturally relevant insights that could inform educational and therapeutic practices in urban schools.

Ecotherapy as a Therapeutic Intervention

Ecotherapy, a nature-based intervention, has gained considerable recognition for its therapeutic potential in enhancing psychosocial well-being, particularly in the context of healthcare settings. As individuals and health practitioners increasingly explore holistic approaches to health, the integration of ecotherapy into supportive care for conditions like cancer is becoming more prominent. The study by Ramya, K., Jain, A., & Kumar, M. (2024) examines the therapeutic benefits of ecotherapy and ecopsychology, focusing on their applicability in cancer care. According to their research, ecotherapy involves a variety of nature-based interventions aimed at promoting healing and well-being by fostering a connection between the human mind and the natural environment. These interventions have the potential to reduce stress in cancer patients by modulating stress hormones, such as cortisol, thereby helping patients cope with the anxiety and demands associated with cancer treatments. By incorporating ecotherapy into healthcare environments, such as hospitals and clinics, practitioners can enhance the overall well-being of cancer patients, creating a more holistic approach to their care.

Building on this foundation, Bodnar (2023) provides a collaborative definition of ecotherapy, framing it as a psychotherapeutic technique that uses an individual's relationship with the ecosystem to foster positive psychological constructs. This conceptualization is critical in understanding the therapeutic mechanisms that underpin ecotherapy, particularly in how it encourages patients to internalize these psychological benefits through their interactions with the natural world. Bodnar's work emphasizes that ecotherapy's relevance extends beyond individual mental health to encompass broader societal concerns, including climate change, making it a versatile and impactful therapeutic tool. By integrating both mental health and environmental sustainability perspectives, Bodnar argues that ecotherapy is a powerful practice for cultivating both individual well-being and ecological awareness.

Ecotherapy among children

Ecotherapy shows promise in addressing various developmental and mental health challenges in children. Research indicates that art therapy and ecotherapy can benefit preschool children's motor skill development, potentially mitigating negative impacts of excessive screen time (Miranda Orama, 2021). An integrated approach combining animal-assisted and plant-assisted ecotherapy has been developed for preschool children with speech disturbances, incorporating educational, rehabilitation, and correction components Kalashnikova, E. N., Soloveva, V. N., & Ivanova, E. A. (2016). Ecotherapy has also demonstrated positive effects on academic performance and ADHD symptom severity in children, with age acting as a moderator and symptom severity as a mediator Altarawneh, F., Hasan, N., & Kharabsheh, S. (2023). In Ukraine, a psychosocial rehabilitation center utilizing ecotherapy, animal therapy, and art therapy has been established to address mental health issues in children and adolescents, particularly those affected by emergency situations Mykhaylov, S., Skrypnyk, O., & Radzikhovskiy, O. (2017). These studies collectively highlight the potential of ecotherapy as a comprehensive approach to improving children's mental health and developmental outcomes.

The COVID-19 pandemic further underscored the importance of mental health interventions that could be adapted to crises. Chaudhury, P., Banerjee, D., & Biswas, S. (2020) review the implications of ecotherapy during this global health crisis, identifying nature-based interventions as effective tools for mitigating the mental health impacts brought on by the pandemic. The paper highlights specific ecotherapy techniques, such as therapeutic horticulture, animal-assisted therapy, and nature-based activities, which could be employed to reduce psychological distress caused by social isolation and the broader societal anxieties of the time. This research underscores the potential of ecotherapy to be mobilized in public health crises, providing low-cost, accessible mental health support that could be adapted to various settings and populations. The relevance of these findings lies not only in their application to pandemic-related distress but also in their broader implications for the role of nature in addressing a wide range of mental health conditions.

Nature-Based Healing

Summers et al. (2018) take a broader ecological perspective, framing ecotherapy as an ecosystem service, a vital, yet often overlooked, contribution of nature to human health and well-being. The authors argue that interactions with nature provide crucial benefits for both mental and physical health, a concept that is becoming increasingly important as society becomes more disconnected from the natural environment. Ecotherapy is presented as a low-cost and accessible tool for enhancing mental health, one that has largely been underappreciated in public health discussions. Summers et al. argue that this disconnect from nature not only undermines individual well-being but also contributes to a larger societal disengagement from environmental issues. By positioning ecotherapy as an essential service that supports both ecological sustainability and human health, this research highlights the dual benefits of fostering a closer relationship with the natural world.

Chalquist (2009) expands on the psychological dimensions of ecotherapy, proposing the concept of a "psychology of place" that helps individuals reconnect with the natural environment for mutual healing. Chalquist's research provides an overview of various ecotherapeutic techniques, such as horticultural therapy, wilderness excursions, stress management, and animal-assisted therapy, illustrating the diverse ways in which nature can be incorporated into psychological treatment. By re-establishing a connection with the natural world, Chalquist argues, individuals can experience profound psychological healing, while also contributing to the well-being of the environment. This reciprocal relationship between human and environmental health forms the foundation of Chalquist's argument for integrating ecotherapy into mainstream psychological practices. His advocacy for a psychology of place suggests that ecotherapy is not merely an intervention but a paradigm shift in how we conceptualize mental health in relation to the environment.

Davis, J., McGinnis, M., & Marlowe, S. (2009) offer a more experiential approach to ecotherapy, focusing on the therapeutic paradigm of ecotherapy and the experiences of graduate students who participated in ecotherapy courses. Their findings reinforce the notion that personal health and healing are intrinsically linked to the health of the natural environment, a premise that is central to the ecotherapy model. Through experiential learning, students engaged with nature in a way that fostered openness, trust, and cooperation, which Davis et al. argue are crucial components of both therapeutic practice and environmental stewardship. By highlighting the transformative potential of nature-based experiences, this research adds a practical dimension to the theoretical framework of ecotherapy, demonstrating its applicability in both educational and therapeutic contexts. The paper further underscores the importance of cooperation and

community in ecotherapy, suggesting that healing extends beyond the individual to encompass the collective well-being of both people and the planet.

The work of Buzzell, L., Chalquist, C., & Macy, J. (2009) offers a comprehensive examination of nature-based psychological healing methods, with contributions from experts in the field of ecotherapy. Their book, Ecotherapy: Healing with Nature in Mind, integrates scientific research with traditional and indigenous knowledge, presenting alternative approaches to psychotherapy that are both supported by empirical evidence and rooted in ecological consciousness. This exploration of nature-based healing methods underscores the importance of reconnecting with the environment not only for personal well-being but also for spiritual development and community restoration. Buzzell et al. position ecotherapy as a more cost-effective and potentially more impactful alternative to traditional psychotherapy, especially for individuals seeking a more holistic approach to mental health. The research presented in this book highlights the profound interconnectedness of human and ecological health, offering a vision of psychotherapy that is grounded in the principles of sustainability and ecological justice.

Biophilia Hypothesis

Finally, Pedretti-Burls (2007) discusses ecotherapy as a therapeutic and educative model based on the Biophilia Hypothesis, which posits that humans have an innate need to affiliate with nature. This model suggests that human well-being is fundamentally tied to the natural environment, not only in terms of material needs but also in relation to emotional, cognitive, aesthetic, and spiritual development. Pedretti-Burls argues that modern society's increasing distance from nature has significant implications for mental health, particularly in how it limits opportunities for personal growth and emotional resilience. By re-integrating nature into therapeutic and educational practices, ecotherapy offers a pathway for addressing these concerns, fostering a deeper sense of connection and belonging that is essential for holistic well-being.

Children's Fantasy

Children's fantasy refers to imaginative play where children create and inhabit fictional worlds, often characterized by elements such as magic, mythical creatures, and heroic adventures. This form of play is integral to children's cognitive development and emotional understanding (Singer & Singer, 1990). Fantasy play in children involves the enactment of scenarios that diverge from reality, allowing for the exploration of complex emotional themes, social roles, and moral dilemmas in a safe environment. It fosters creativity and problem-solving skills (Harris, 2000). Children's fantasy often includes the use of imaginary companions, which can enhance social skills, creativity, and emotional regulation. These relationships allow children to express thoughts and feelings they may not articulate in other ways (Bouldin, 2006). The role of fantasy in children's play is pivotal for emotional understanding, as it allows children to experiment with various roles and scenarios, leading to greater empathy and perspective-taking abilities (Seja & Russ, 1999).

Psychological Significance of Children's Fantasy as a Variable

Children's fantasy is a crucial psychological variable, playing a significant role in their cognitive, emotional, and motivational development. Research on children's fantasy reveals that it is not merely an imaginative escape but a complex cognitive process that supports emotional understanding and problem-solving. Fantasy play, for instance, is strongly linked to emotional development, as it allows children to

explore and express feelings in a symbolic manner. Seja and Russ (1999) found that cognitive aspects of play, such as role-playing and imagining different scenarios, are associated with children's ability to understand emotions, even when controlling for verbal ability. This suggests that fantasy play may offer a unique pathway for emotional development beyond language-based skills.

Moreover, children with imaginary companions; a common manifestation of fantasy often exhibit more vivid imagery in daydreams and pretend play. These children also incorporate mythical themes into their dreams and games, pointing to a deeper engagement with creative and fantastical thought (Bouldin, 2006). This heightened imagination can be seen as a cognitive resource, enabling children to explore abstract concepts, navigate complex social situations, and develop a richer internal world.

In educational settings, fantasy involvement is associated with motivational styles. Hoff, E. V., Ekman, A., & Pho, A. K. (2017) found that highly imaginative children tend to have a stronger mastery goal orientation, meaning they are more focused on learning and personal growth than on external validation. This motivational style is particularly beneficial in academic environments, suggesting that fantasy play may foster a positive attitude toward learning and persistence in overcoming challenges.

The content and nature of children's fantasies also vary according to individual differences, such as age, gender, and personality traits. Harris and Beggan (1993) noted that children's fantasies can range from positive, creative scenarios to more complex role enactments that allow for the exploration of different identities and situations. These variations reflect the unique ways children engage with their fantasies, offering insights into their emotional and cognitive worlds.

Overall, the multifaceted nature of children's fantasy highlights its potential as a valuable resource not only for psychological development but also in educational and clinical settings. Whether through enhancing emotional understanding, fostering creative problem-solving, or supporting motivational growth, fantasy can serve as a key developmental tool that nurtures the whole child.

Aggression

Aggression is a multifaceted behavior that can range from symbolic expressions of hostility to physical violence, presenting significant social and health implications. Defined broadly, aggression encompasses both overt actions, such as physical attacks, and more subtle behaviors, such as verbal threats or symbolic gestures of dominance (Stokes & Cox, 1969). This complexity is reflected in its wide-ranging consequences, from family conflicts and criminal behavior to more personal health risks like cardiovascular disease Vakili, R., Tabibi, Z., & Arman, Z. (2015). As a behavior of critical concern, particularly in fields like nursing and psychology, understanding aggression is essential for developing effective intervention and prevention strategies that can mitigate its harmful effects (Liu, 2004).

Definition of Aggression

Aggression in children is defined as behavior intended to harm or injure another person, which can manifest in various forms, including physical, verbal, and relational aggression. It is often influenced by environmental, social, and individual factors (Crick & Grotpeter, 1995). Children's aggression can be conceptualized as a response to perceived threats or frustrations, which can manifest as both proactive and reactive aggression. Proactive aggression is premeditated, while reactive aggression is impulsive and defensive (Dodge & Coie, 1987). Aggression in childhood is characterized by hostile actions that can be physical or verbal and may stem from difficulties in emotional regulation and social interactions, often influenced by family dynamics and peer relationships (Vitaro et al., 2006). Aggressive behaviors in children can serve various functions, including obtaining desired objects, establishing dominance, or

retaliating against perceived threats. Understanding these functions is crucial for effective intervention strategies (Berkowitz, 1993).

Factors Influencing Aggressive Behavior:

The factors influencing aggression are diverse and include both environmental and biological elements. For example, excessive alcohol consumption has been strongly associated with early-onset aggressive behavior, suggesting that substance use can act as a catalyst for aggressive outbursts (Vakili et al., 2015). Additionally, gender differences in aggression have been observed, with women reportedly engaging in physical aggression more frequently and in a wider variety of ways. However, men are more likely to cause physical injury during aggressive encounters, pointing to distinctions in how aggression is expressed across genders (Vakili et al., 2015).

Social factors also play a role in shaping aggressive behavior. Children from divorced families, for instance, have been found to display higher levels of hostility and aggression compared to their peers from stable, intact families (Vakili et al., 2015). These findings suggest that early life experiences, particularly those involving familial instability, can have a lasting impact on a child's tendency to engage in aggressive behaviors. The origins and manifestations of aggression are diverse and often influenced by a combination of genetic, environmental, and situational factors, making it a topic of ongoing discussion and concern in psychological research and practice (Lanza, 1983).

Given its complexity and far-reaching consequences, aggression remains a critical focus in both clinical and educational settings. By deepening our understanding of the underlying mechanisms and influences of aggression, it is possible to design more effective interventions that not only reduce aggressive incidents but also address the root causes of this behavior.

Present Study

The purpose of this research is to investigate the effects of ecotherapy on children's fantasy behavior (imaginative play) and aggression in early school-aged children. By conducting this study within the cultural context of Pune, India, the research seeks to address the aforementioned gaps in the literature and contribute to a growing body of knowledge on the benefits of nature-based interventions. This study utilizes a quasi-experimental pre-test post-test design, with early school-aged children (aged 8) as participants. Two groups were formed: an experimental group exposed to ecotherapy interventions (nature-infused classroom environments and activities) and a control group in standard classroom settings without such interventions. The study measured children's fantasy behavior and aggression using validated instruments, and the results were analyzed through Analysis of Covariance (T-Test) to assess the impact of ecotherapy on the two dependent variables.

By addressing these aims, this study seeks to make meaningful contributions to the fields of psychology, education, and therapeutic interventions, offering practical applications that may inform educational policy and contribute to the holistic development of children in urban environments.

Statement of the problem

To study the effects of ecotherapy intervention on children’s fantasy and aggression among early school aged children.

Objective of the study

To assess the efficacy of ecotherapy intervention on children’s fantasy and aggression among early school

aged children.

Rationale

Urbanization has diminished children's daily interactions with nature, leading to a decrease in their overall quality of life. Regular contact with natural environments is crucial during key developmental stages for cognitive, social-emotional, and motor skill development. Such exposure can also have lasting effects into adulthood (World Health Organization,2021). This disconnection has been termed "Nature-Deficit Disorder" (Louv, 2008) and is associated with a rise in psychological issues among children. Allowing children to engage in free play outdoors in natural settings can enhance their attention spans, foster creativity, and stimulate a desire to learn through exploration, ultimately contributing to their overall well-being (American Society of Landscape Architects, n.d.).

Although the benefits of ecotherapy on creativity are acknowledged, there is a significant gap in understanding its specific effects on children's fantasy behavior and its potential to reduce aggression. This study aims to address this gap by exploring the relationship between ecotherapy, fantasy behavior, and aggression within the cultural context of Pune, India. This research will investigate the complex relationship between children's fantasy and aggression, utilizing ecotherapy settings to enhance our understanding of these variables. SCAMPER activities, which encourage creativity by prompting participants to Substitute, Combine, Adapt, Modify, Put to other uses, Eliminate, and Reverse elements of an object or idea Dehham, S. H., Nayif Hasan, A. A., & Farj, I. I. (2020)., have been shown to improve creative thinking in various educational contexts (Gündoğan, 2019). However, SCAMPER activities combined with nature-based settings or properties and their effects on aggression among children have not been studied in the existing body of literature. Thus, this research will also investigate this intervention to address the existing knowledge gap.

Significance

A survey conducted on over 46,000 individuals across 296 districts in India revealed that approximately 61 percent of urban parents observed their children spending excessive time on social media, leading to signs of aggression, impatience, hyperactivity, and a lack of concentration (New Indian Express, 2023). In an increasingly digital world, children's engagement with nature has declined, potentially affecting their imaginative play and overall development. This study seeks to investigate the effects of ecotherapy on children's aggression levels and fantasy behavior, with a particular emphasis on imaginative play. It is hypothesized that integrating nature-based activities into the educational environment will enhance children's creativity and reduce aggression.

Existing research primarily conducted in Western contexts suggests that ecotherapy benefits mental health and creativity, but there is a significant gap in studies focusing on Indian populations. Furthermore, the mechanisms through which ecotherapy influences children's fantasy behavior, particularly the role of aggression, remain underexplored. Additionally, many studies have focused on the construction of biophilic gardens, which can be economically prohibitive and spatially unfeasible for many schools. Therefore, this study aims to explore alternative, more practical interventions, such as short nature walks and digital nature sounds, to promote a connection with nature.By addressing these gaps and providing practical applications, this study will add to the existing body of knowledge and guide educational policies to promote creative development in children.

Literature Review

The literature on childhood aggression has a long history, with early studies, often predating 2000, emphasizing gender differences. Girls were found to exhibit more verbal or indirect aggression, while boys showed more direct physical aggression. Imaginative play and fantasy were also identified as key factors in childhood aggression, often viewed as age-related and influenced by cultural gender norms. Initially, much of this research was Western-based, using qualitative methods like projective tests and observational studies. Over time, the scope broadened to include non-Western contexts, such as India, with an increasing focus on environmental and social factors like media exposure, family dynamics, and socioeconomic influences. Research methods diversified to include surveys and experimental interventions. In recent years, attention has turned to natural settings and ecotherapy, which have been shown to reduce aggression and improve emotional regulation, particularly in urban environments where environmental deprivation is linked to juvenile violence. This shift has led to more robust methodologies, including randomized experimental designs, highlighting the growing recognition of the interplay between psychological, environmental, and social factors in explaining and mitigating childhood aggression. This evolving body of research underscores the importance of integrating nature-based interventions, particularly in rapidly urbanizing areas, where the disconnection from natural environments may exacerbate aggressive tendencies in children.

Increasing Urbanization and Its Impact on Child Development

Urbanization is the demographic transition phenomenon where increasing proportion of people live in cities (Negahban, 2023). This is a global trend and powered by push factors like lack of opportunity in rural areas, and pull factors like better job opportunities and services in cities Tyagi, S. K., Kumar, V., Kumar, K., & Kumar, D. (2023). Urbanization is a process of physical, demographic, and economic growth and it leads to the high-density settlement patterns (Fox Gotham & King 2019). Urbanization can be extremely beneficial for national states and serve social aspirations, although it has the twin hazards to environmental health quality as well as resource in urban processes (Tyagi et al., 2023; Negahban, 2023). According to the United Nations, all regions of the world are projected to become more urbanized over time, with cities holding between 68% (Africa) and 88% (Latin America and the Caribbean) of their countries' populations by 2050 compared to only about a mere third or less in most developing countries today —and nowhere will the trend be as pronounced as it is already underway in China, where just last century alone millions moved northward seeking jobs from rural areas into booming high-technology enclaves! Other estimates show similar rates for places like Haiti or India if these trends continue unchecked (Gu Chaolin,2020). The number of people living in cities is expected to rise by 2.5 billion by 2050 due to the rapid increase in global urbanization. (Bloomberg, 2019) According to the UN, urbanization -- the increasing share of the population residing in metropolitan regions -- is forecasted to climb from 68.3 percent in 2018 to 85.9% among developed nations by 2050 and from 52.4 percent in 2018 to nearly two-thirds (64.1%) among developing nations. Chaolin (2019) states urbanization — the increasing share of people living in cities — offers both benefits and risks, which must be managed to promote human settlement development.

India's urban population is predicted to reach 600 million by 2031 due to the country's steady increase in urbanization (Punyamurthy & Bheenaveni, 2023). Natural population growth, migration from rural to urban areas, and the growth of the industrial and service sectors have all contributed to the process (Punyamurthy & Bheenaveni, 2023). India's urban population increased from 25.8 million in 1901 to 377.1

million in 2011, with a 31% increase in the proportion of people living in urban areas (Kumar & Navodaya, 2014).

Significant environmental degradation brought on by urbanization has occurred in India, giving rise to challenges with waste management, air pollution, water quality degradation, and land insecurity (Bhuvandas & Aggarwal, 2012; Sivakkolundu & Sujatha, 2018). According to Goswami et al. (2022) there is a shortage of water, increased demand on groundwater resources, and urban flooding as a result of the rapid expansion of cities, specifically affecting natural infrastructure. Urbanization has a negative impact on various environmental elements, such as the biosphere, land and water resources, and climate change (Bhuvandas & Aggarwal, 2012; Sivakkolundu & Sujatha, 2018).

An Introduction to Ecotherapy

Research has demonstrated that urbanization has an adverse effect on metabolic processes, attention, and cognitive function (Shukla, 2023). Ecotherapy, however, shows promise as a way to lessen these impacts. Research suggests that spending time in green areas and the outdoors can enhance mental health, attention span, and emotional well-being (Shukla, 2023; Pronenko, 2024). Through community involvement, ecotherapy activities like sports and gardening in urban green spaces might improve mental health (Aristyowati & Ellisa, 2021). Additionally, it has been discovered that children's interactions with nature foster cognitive growth, improving their creativity and memory (Pronenko, 2024).

Nature has been proposed to effect creativity positively and, furthermore, that exposing children to nature is beneficial for cognitive development a brief review of the evidence summaries will be shown. Wojciehowski & Ernst (2018) found that nature preschools dramatically increase creativity in children as opposed to non-nature preschools. In natural outdoor classrooms, children creativity is best supported by predictable spaces, time-in-the-day, open-ended materials and play-mind-mediate interventions (Li, D., Zhai, Y., Chang, P., Merrill, J., Browning, M. H., & Sullivan, W. C. 2022) found that childhood nature exposure was related to better sensory processing, higher creativity, and stronger nature relatedness in young adulthood. The researchers concluded that the results show nature experiences can foster creativity and cognitive function with young children.

Exploring the Relationship Between Nature, Creativity, and Aggression

The study done by Lockwood and Roll (1980) showed that, in contrast to the control group, kids who acted out in fantasy after feeling frustrated were more prone to act in an extrapunitive or outwardly aggressive manner. The study, however, did not corroborate the theory that fantasy behavior would either enhance or decrease self-directed aggressiveness. Furthermore, compared to younger children, older children were less likely to target others with their aggressiveness. Participants in the between-subjects study were randomized to the experimental and control groups. The selection of participants was based on their respective degrees of propensity for fantasy behavior. While the control group encountered circumstances that were incompatible with fantasy, the experimental group was subjected to circumstances intended to elicit fantasy behavior. Following the experimental manipulation, each participant's direction was evaluated.

The study, however, did not corroborate the theory that fantasy behavior would either enhance or decrease self-directed aggressiveness. Furthermore, compared to younger children, older children were less likely to target others with their aggressiveness. Participants in the between-subjects study were randomized to the experimental and control groups. The selection of participants was based on their respective degrees

of propensity for fantasy behavior. While the control group encountered circumstances that were incompatible with fantasy, the experimental group was subjected to circumstances intended to elicit fantasy behavior. After the experimental manipulation, all participants were assessed for the direction of their aggression.

The studies by primary conclusions demonstrated that youngsters in the "hard-to-manage" group played violent fantasy games more frequently. Violent fantasy play was associated, two years later, with lower levels of empathy and moral sensibility, as well as weaker executive control, linguistic abilities, antisocial behavior, anger outbursts, refusal to assist friends, poor play coordination and communication, and increased conflict with friends. According to the study, analyzing the themes and themes of children's pretend play—especially violent fantasy—can provide important insights on their interests and developmental patterns.

The methodology comprised gathering teacher comments on the quality of friendships, monitoring children's interactions with a friend, and giving cognitive assessments like executive function, false belief, and emotion comprehension. Two years later, children's moral sensibility was also evaluated. (Dunn & Hughes, 2001b)

Fantasy Behavior in Children

The study by Pierucci, J. M., O'Brien, C. T., McInnis, M. A., Gilpin, A. T., & Barber, A. B. (2013) assessed relations between preschoolers' fantasy orientation, inhibition and attention shifting —specific components of executive functions. The instrument yielded four unique factors of fantasy orientation in preschoolers. We also found positive associations between some constructs and specific executive functions, indicating that their inclusion in the child´s repertoire can have developmental implications for this skills. Children were assessed for fantasy orientation and executive function tasks as well as parental reports of the children's behavior through survey questionnaires. We then used principal component analysis to identify the four-factorial structures of fantasy orientations, and we employed hierarchical linear regression analysis to determine the psychometric performances of these factors in predicting executive functions.

The results indicated that specific fantasy orientation constructs are uniquely related to executive functions, supporting the idea that being fantasy-oriented can enhance abilities like inhibition and attention shifting.

This study Hoff, E. V., Ekman, A., & Pho, A. K. (2017). investigated the relationship between kids' involvement in imagination and their motivation in the classroom. The Children's Fantasy Inventory and the Goal Orientation Scales were used to measure the fantasy involvement and classroom motivation of ninety-five Swedish children, ages nine to eleven. According to the research, kids with high levels of imagination also tended to have mastery goal orientation, which indicates that they were more concerned with growing and learning. Positive imaginations, such as whimsical and joyful daydreams, were specifically connected to mastery objectives, which were academic achievement and personal development for kids. On the other hand, kids who had bad fantasies—like terrifying dreams or forgetful moments—were more likely to have avoidance objectives, which involved attempting to avoid obstacles or failing.

These findings imply that a child's involvement in imagination, whether favorable or unfavorable, can have a big impact on how they motivate themselves, which may or may not improve their performance in the classroom. Thus, fantasy could be utilized as a tool to inspire students in educational environments.

Aggression in Children

Alarming national and international patterns are highlighted by research on childhood aggression. According to a 2020 World Health Organization (WHO) report, child aggression and violence continue to be major global problems. This research, which was produced with input from more than a thousand decision-makers in 155 countries, emphasized the disparity between the objectives of the Sustainable Development Goals (SDGs) and the state of affairs at the moment. The World Health Organization (WHO) reports that while many nations have put programs in place, much more is required to achieve quantifiable decreases in youth aggression and violence.

According to recent studies, youngsters in India exhibit alarming levels of violence. According to a 2022 survey done in several schools, 40% of kids exhibited moderate to severe violent behavior. Family dynamics, media violent exposure, and social pressures are all contributing causes. Furthermore, according to UNICEF data, 35% of pupils in schools report experiencing bullying, which is strongly linked to aggressiveness in Indian children.

Children worldwide are susceptible to violence, which can take the form of sexual, emotional, or physical abuse, according to a UNICEF report. Environmental variables, such as dysfunctional families, social disputes, and insufficient support networks, are frequently the root cause of aggression (Murray & Newby, 2012).

These days, it's fairly typical to witness schoolchildren acting aggressively. It's also one of the most common behavioral traits in kids nowadays that raises a lot of concerns. Aggression is a broad category that includes both hidden and overt displays of aggressive behavior. Purposive sampling was used in the current study to identify specific private schools in Bangalore City. Through the use of a teacher's checklist and the Direct-Indirect Aggression Scale (Bjorkvists, 1992), a rating scale that is completed by class teachers, the researcher was able to identify 366 students out of 38 schools. The study set out to identify the many forms of violence that boys and girls exhibit, as well as the nature of aggression in elementary school settings.

This study investigated the differences in aggressive behavior between gender and grade levels from grade 1 to grade 4. When it came to the direct aggression that boys demonstrated more than girls, there was a very substantial difference between the two genders. However, there was no significant difference between the genders when it came to the verbal or indirect aggression. In the sample, girls displayed Verbal, Direct, and Indirect aggressiveness, while boys displayed Direct, Verbal, and Indirect aggression. Additionally, it was observed that verbal aggressiveness took the role of direct aggression in the classrooms from grades 1 through 4. In grade 4, males and girls displayed the highest level of overall hostility. (Murlidhar & Shastri, 2016)

The Role of Nature in Reducing Aggression

It has been shown that being in nature helps to lessen the violent tendencies that are usually present in those who lack self-control. According to the study Wang, Y., She, Y., Colarelli, S. M., Fang, Y., Meng, H., Chen, Q., Zhang, X., & Zhu, H. (2017)., those who had lost their ability to regulate their anger were more aggressive than those who had not. When compared to participants placed in urban environments, exposure to nature significantly reduced the aggressive behavior in depleted individuals. It has been demonstrated that a brief time spent in nature helps people regain self-control and regulate their violent impulses. Participants were randomized to either non-depletion or depletion circumstances, and they were then placed in either urban or natural environments. In order to investigate the relationship between

ambient factors and the loss of self-control, participants in a competitive reaction-time task were given the ability to blast imaginary opponents with noise.

Another Research (Kuo & Sullivan, 2001) indicates that connecting with nature can help lower aggression and violence among residents of inner-city public housing by easing mental fatigue. The findings revealed that those living in areas with less greenery, such as trees and grass, reported higher instances of aggressive behavior compared to their counterparts in more natural settings. Furthermore, individuals in stark environments experienced greater mental fatigue, establishing a clear link between mental exhaustion and aggressive actions. Notably, the study found that the connection between proximity to nature and aggression was entirely mediated by attentional functioning, reinforcing the notion that nature can mitigate aggression by enhancing cognitive abilities and alleviating mental strain. The research utilized a randomized between-groups design, assigning participants to buildings with different levels of nearby greenery. Attentional functioning served as a measure of mental fatigue, and mediation analyses were conducted to investigate the relationship between exposure to nature, attentional capacity, and aggression. According to research done by F. Kuo (2001), spending time in nature might assist reduce mental weariness, which may lessen hostility and violence among those living in public housing in inner cities. The results showed that those who lived in buildings with less natural features—such as grass and trees—reported far higher levels of hostility than people who lived in greener settings. These inhabitants also experienced higher levels of mental exhaustion, which was directly related to their violent inclinations. According to the study, the relationship between being close to nature and aggression is entirely mediated by how it affects attentional performance. This means that being in nature reduces aggression by recharging the mind and improving cognitive function. With 145 participants, the study used a between-groups design. Participants were randomly assigned to different buildings according to the amount of vegetation in the vicinity. The association between nature, mental weariness, and violence was examined through mediation studies, and attentional functioning was used as a proxy for mental exhaustion.

Programs for ecotherapy have been demonstrated to have a favorable effect on emotionally vulnerable kids by lowering aggression and raising emotional health. In one study, measures of outcomes like happiness, emotional growth, and self-esteem were obtained through person drawings and the Piers-Harris self-concept scale. The intervention involved the therapeutic use of nature to promote emotional maturation, with a foundation in child development theory and ecopsychology. The participants' levels of self-efficacy, happiness, self-esteem, empathy, and perceptual abilities all significantly improved, while their level of aggression significantly decreased, according to the results. This demonstrates how well therapy programs rooted in nature may support children's emotional and intellectual growth (Feral, 1998). Being an essential part of natural settings, green spaces have been well researched for their beneficial effects on mental health; however, less research has been done on how they affect social behavior, notably aggression. Previous studies have focused mostly on the benefits of direct interaction with environment; however, the important contribution of passive nature exposure—a more frequent everyday occurrence—has sometimes been disregarded. In order to investigate how passive exposure to green spaces affects aggression and how sense of control functions as a mediator, Liu et al. (2024) carried out two research. A cross-sectional survey was employed in Study 1 (N = 244) to evaluate the correlation between aggression, sense of control, and passive exposure to green spaces. A single-factor between-subjects experimental design was used in Study 2 (N = 260) to investigate these correlations in more detail in a controlled setting. Both study's findings showed a negative correlation between passive green space exposure and aggression, with a greater sensation of control acting as a partial mediating factor in this association. In particular, it

was discovered that passive green space exposure increased people's sense of control, which adversely predicted violence. These results highlight the possibility of using environmental cues, such as green spaces, to increase a person's sense of control and so lessen violence. This research adds to our knowledge of the wider effects of green spaces, which go beyond mental health to encompass social behaviors. Liu et al. (2024) highlighted how green spaces may be incorporated into urban planning and environmental design to promote community well-being and reduce aggressive behaviors, and we talked about the theoretical and practical consequences of our findings.

Nature's Impact on Creativity and Fantasy

In contrast to the negative impacts of urbanization, the study done by Shukla (2023b) focused on the benefits of ecotherapy for wellbeing and cognitive performance. The technique comprised a comprehensive search of databases such as EBSCO, JSTOR, and Google Scholar in order to identify pertinent literature that had been published in the past ten years. The review emphasized how ecotherapy promotes emotional wellness and improves cognitive abilities including attention span and relaxation. On the other hand, because urban stressor exposure is substantial, urbanization has a negative impact on reaction behaviors, cognitive processes, and attentional activities. The review came to the conclusion that eco-therapeutic approaches can greatly enhance one's physical and mental well-being.

A study by Lockwood and Roll (1980) looks at the relationship between children's fantasy activities and aggressiveness, especially after frustration. The major findings demonstrate that children who engaged in imagination following a frustrating experience were more likely to exhibit their aggressiveness overtly (extrapunitively), compared to children in the control group. Younger children were more likely to exhibit this outwardly focused hostility, while older children showed less inclination toward this conduct. The hypothesis that fantasy behavior would either increase or decrease self-directed (intrapunitive) aggressiveness was not supported by the investigation.

Another research study Bacigalupa and Wright (2009) examines children's fantasy narratives, particularly focusing on the function of aggression in these tales. The results reveal that children—irrespective of gender—frequently incorporate aggressive elements into their stories; however, boys tend to do so slightly more often than girls. Interestingly, the interest in aggressive content remains relatively constant across ages during the preschool years. This presence of aggression in children's narratives does not signify an unhealthy preoccupation with violence; rather, it illustrates their capacity to engage with aggression while adhering to socially acceptable boundaries. Although children do not dwell on the intricate details of aggressive actions, they present a nuanced depiction of aggression within their imaginative realms. The research methodology entailed the collection of 290 stories dictated by children aged 2 to 6 years. These narratives were analyzed using both quantitative and qualitative approaches to uncover prevalent themes and patterns associated with aggression. The analysis also considered the gender distribution among the children, seeking to understand how they wove aggressive acts into their fantasy characters and scenarios. This research indicates that aggression found in children's fantasies (1) constitutes a natural aspect of their imaginative storytelling; however, it is framed by boundaries that reflect healthy emotional and cognitive development. Although some may perceive such aggression as concerning, it is important to recognize its role in fostering creativity. This phenomenon occurs because children's narratives often serve as a means of processing complex emotions. But, one must remain cautious, as excessive aggression could signal underlying issues.

Brodzinsky, D. M., Messer, S. B., & Tew, J. D. (1979) compares how boys and girls express and control

aggression, with a particular emphasis on overt verbal and physical aggression (1), indirect aggression, and the function of fantasy aggression. The results show that whereas girls often express more indirect anger, boys tend to show more overt forms of physical and verbal aggressiveness. Boys tended to be more physically aggressive in fantasy scenarios, whereas girls tended to be more subtly aggressive. It's interesting to note that ladies showed better control over their fantasy aggressiveness than boys did, with a higher ratio of aggression control to total fantasy aggression. The study's approach measured fifth-grade children' fantasy aggressiveness and control using a projective test that was modeled after the Thematic Apperception Test, or TAT. Additionally, peer and teacher ratings were utilized to evaluate overt and peer-oriented aggression. This comparison of aggression levels considered various types, including physical, verbal and indirect aggression, to underscore the gender differences in aggressive behaviors and their control within both real-world and fantasy contexts. The results show that although girls are frequently better at managing (and suppressing) their aggressive impulses, boys typically exhibit more overt hostility. Their imaginative play is one area where this is really clear. However, a number of societal factors that affect how aggression is manifested could be the cause of this variation. Girls, because of these factors, often display a milder kind of aggressiveness, which can be overlooked. This shows that hostility cannot be easily categorized based only on gender and that play dynamics are complicated.

Implementing and Validating SCAMPER as an Intervention Strategy

The SCAMPER technique has demonstrated considerable effectiveness in enhancing creativity and learning outcomes across diverse educational contexts. Research by Gündoğan (2019) indicates that SCAMPER significantly improves the creative imagination of young children, leading to enhanced fluency in their creative expressions. Additionally, Altiparmak (2021) found that SCAMPER-based activities in a simple machines science unit not only boosted students' academic achievement but also increased their motivation, although it did not significantly change their attitudes towards science lessons. The versatility of SCAMPER is further evidenced by the study conducted by Hussain, M., & Carignan, A. (2016)., which revealed that combining SCAMPER with animal adaptation ideas significantly elevated the inventiveness and complexity of projects created by fourth graders. Moreover, the SCAMPER program has proven beneficial in language education; for instance, Fahmy et al. (2017) reported substantial improvements in the creative speaking skills of EFL primary students through the application of SCAMPER-based activities in storytelling. Collectively, these findings suggest that SCAMPER is a robust tool for fostering creativity, critical thinking, and subject-specific skills across various age groups and disciplines. While the technique positively influences many learning outcomes, it is essential to consider the mixed results regarding students' attitudes towards certain subjects, indicating that further exploration is warranted to maximize the effectiveness of SCAMPER in diverse educational settings.

The study done by Hussain and Carignan (2016b) explored the effectiveness of using SCAMPER combined with animal adaptation ideas to enhance creative and inventive thinking in fourth-grade students. A repeated-measures design was employed, with all 24 participants (14 females, 10 male), aged 9-10, from a suburban Midwestern elementary school, experiencing both experimental and control conditions. In the experimental condition, students used SCAMPER charts integrated with animal adaptation concepts to generate ideas for improving a product using limited materials. In the control condition, students used simpler SCAMPER charts without the added animal adaptation context. The intervention demonstrated that SCAMPER combined with animal adaptation ideas significantly increased students' creativity and inventiveness compared to using SCAMPER alone. However, no existing research

has been found that utilizes SCAMPER activities incorporating nature and nature-based properties.

Method

The chapter is about methodology of the present research. It comprises independent and dependent variables under the study as well as operational definitions of each one of the variables that characterized the study. It also researches design that is employed in the study. This chapter then involves a description about the participants who were included in the study. The chapter then comprises hypotheses that are to be tested in the study. The description of the psychometric tools used in measuring variables under the study in detail is discussed. Later, step-by-step procedure of the study is discussed.
Including scrutinizing the data, the scoring process, and what statistical procedure was performed on the data.

Variables

Independent Variable

Ecotherapy (intervention)

Dependent Variables

Children's Fantasy
Aggression

Control Variables

- Age: The participants are specifically children aged 8-9, marking a developmental transition.
- Gender: The sample includes both males and females, which may influence behaviors and responses.
- Socioeconomic Status: Considering the participants are from a semi-English medium school, their socioeconomic backgrounds might vary and could affect their experiences and engagement with nature.

Hypotheses

1. Gain scores of Children's Fantasy will be significantly higher in experimental group as compared to control group.
2. Gain scores of Aggression will be significantly lesser in experimental group as compared to control group.

Conceptual definitions

Children's fantasy: Children's fantasy refers to the imaginative activities and pretend play that allow children to create scenarios, characters, and narratives that extend beyond reality. This includes elements of daydreaming, role-playing, and creative storytelling, enablig children to explore their thoughts, emotions, and social roles (Rosenfeld, 1982).
Aggression: Human aggression is any behaviour directed toward another individual that is carried out with the proximate (immediate) intent to cause harm. In addition, the perpetrator must believe that the behaviour will harm the target, and that the target is motivated to avoid the behaviour (Bushman & Anderson 2001, Baron & Richardson 1994, Berkowitz 1993, Geen 2001).

Sample

This study is an intervention study conducted on children aged 8–9, which marks the transition from the pre-operational stage to the concrete operational stage. The study comprises a total of 90 participants, with 45 in the control group and 45 in the experimental group. The participants included both males and females and were selected from a semi-English medium school in Pune city. Responses were collected using paper-pencil tests, and the participants were chosen through purposive sampling techniques.

Research Design

Quasi Experimental pre-test and post-test, experimental control group Design.

The quasi-experimental pre-test and post-test, experimental control group design was appropriate for this research as it enabled comparison between the ecotherapy intervention group and a control group. It helped assess changes in children's fantasy and aggression over time while controlling for pre-existing differences. This design was practical for the school setting, where randomization was not feasible, and allowed for more controlled observations of the intervention's effects.

Tools

The present study consists two standardized tools that are mentioned as following:

Children's Fantasy Inventory (CFI)

The Children's Fantasy Inventory is a measure consisting of 45 items designed to assess various dimensions of imaginative play in children. It utilizes a Likert scale for scoring, where responses range from 2(a lot), 1(a little) to 0(no). The Children's Fantasy Inventory (CFI) demonstrates moderate to good validity and reliability for assessing children's fantasy behaviors. The test-retest reliability over a month is 0.67, while the internal consistency ranges from 0.42 to 0.70, with the Absorption scale showing an alpha of 0.59. A follow-up after one year confirmed stable individual differences in fantasy behaviors, and an overall alpha of 0.50 is deemed suitable for younger children. The CFI includes nine subscales that capture both related and independent behaviors, with an average intercorrelation of 0.4: Frequency, Aggressive, Fanciful, Absorption, Scary, Vivid, Intellectual, Active-Heroic, and Dysphoric. Boys tend to score higher in Active-Heroic fantasy compared to girls, highlighting a distinction between the genders. The CFI underscores the gender and developmental differences in children's imaginative play, particularly among first and third graders.

Reactive-Proactive Aggression Questionnaire (RPQ)

The Reactive-Proactive Aggression Questionnaire (RPQ) has strong dependability and internal consistency: McDonald's omega and Cronbach's alpha For the subscales and overall scale of the RPQ, these metrics of internal consistency and reliability were satisfactory. For instance, in one study, the entire scale's Cronbach's alpha and McDonald's omega were, respectively, 0.930 and 0.921. Total-item correlations: The whole scale showed correlations between 0.41 and 0.60, the proactive scale between 0.41 and 0.57, and the reactive scale between 0.45 and 0.58. Confirmatory factor analysis: The two-factor structure of the RPQ provided a good fit to the data. A 23-item scale called the RPQ is used to quantify both proactive and reactive aggression. The Likert-type scale has three points; 0 represents "never," 1 represents "sometimes," and 2 represents "often." Elevated scores correspond to increased levels of aggression.

Procedure

The study utilized a 7-day intervention to examine the effects of ecotherapy on children's fantasy behavior and aggression. Conducted at Mahesh Vidyalaya (SEM), the intervention followed a structured process with two phases: baseline data collection through pre-test measures on the first day, and post-test assessments on the final day to measure changes. Both tests, translated into Marathi using the forward-backward method and reviewed for accuracy, were administered simultaneously to both control and experimental groups. The experimental group participated in daily ecotherapy activities, such as nature walks, nature art, and imaginative play, aimed at fostering creativity and reducing aggression, while the control group continued their regular school routine without the intervention. Groups of 40-50 students were formed, and written consent was obtained from parents. Each session lasted for 1 hour. The behaviors of both groups were monitored throughout, and mean scores for children's fantasy and aggression were compared to evaluate the impact of ecotherapy on the dependent variables.

Plan for the Intervention program

The intervention program focused on testing if ecotherapy had a potential impact on the fantasy and aggression among children. It included a variety of nature-oriented activities to create a sense of creativity, relaxation, and emotional regulation among school-aged children. This series of activities was held over seven days in an alternating mix of outdoor and indoor experiences to include mindful walks, nature-inspired art, storytelling, and sensory activities aimed at imagination-based play. The intervention targeted aggression reduction while at the same time promoting fantasies, as created by the activities that the experimentees involved themselves in, based on nature.

Days	Activities	SCAMPER	Objectives	Instructions
Day 1	Ice- Breakers, Conversation with Trees and Nature Bracelets	Substitutes	Substitute Human Interaction	Talk to the trees like they're your friends and make bracelets using leaves, flowers, and twigs you find around!
Day 2	Role Playing Natural Habitat	Combine	Combine Fantasy and Natural settings to develop empathy and teamwork	Act like animals or plants in their natural habitat, showing how they live and interact with the environment.
Day 3	Nature Themed Art and Crafts	Adapt	Adapt Transitional Art Forms using natural materials	Create art and crafts using natural materials like leaves, flowers, and sticks to make

				fun nature-themed projects.
Day 4	Story Telling with Nature Sounds and Inventing New Animals or Birds	Modify	Modify Story telling by incorporating natural sounds and new creature intervention	Create stories using nature sounds and imagine new animals or birds, describing their unique traits and behaviors.
Day 5	Cloud Gazing and Nature Charades	Put to another use	Use Cloud shapes and natural Objects for imaginative playing and mindfulness	Observe cloud shapes and then act out nature-related charades inspired by what they see.
Day 6	Nature-Inspired Treasure Hunt	Eliminate	Eliminate traditional toys, replace with nature based treasure hunt	Search for nature-themed treasures hidden around the area, using clues to find items like leaves, rocks, or flowers.
Day 7	Creating Sound maps, Leaf Tracing and overall reflection.	Rearrange	Rearrange sensory experiences with sound maps and leaf tracings.	Listen carefully to the sounds around you, trace the shapes of leaves, and reflect on your experiences in nature to create a personal nature map.

Plan of Data Analysis

After data collection, the scores were processed and analysed using JASP software. Following was the plan.

Data Preparation: The raw scores were organized and processed using Excel to ensure accurate calculations for the analysis.

Descriptive Statistics: Summarized the basic characteristics of the data, including mean, standard deviation (SD), standard error (SE), and coefficient of variation for both groups.

Independent Samples T-Test: This test was used to assess differences in aggression gain scores and child-

ren's fantasy gain scores between the two groups. It was chosen to determine if there was a statistically significant effect of the intervention.

Results and Discussion

The following chapter includes reliability of the translated Marathi versions of both instruments, descriptive and inferential statistics performed on the data. The data was analysed with the help of JASP (Version 0.19.1) Primary analysis is quantitative in nature. In the beginning, descriptive statistics are given. After descriptive statistics, inferential statistics are stated. The next section of the chapter will include the discussion of the results.

Reliability of the Translated Marathi Versions of Both Instruments

Children's Fantasy Inventory (CFI)	
Estimate	**Cronbach's α**
Point estimate	0.823

The unidimensional reliability of the scale, indicated by a Cronbach's alpha of 0.823, suggests a good level of internal consistency among the items measuring the construct. According to George and Mallery (2003), a Cronbach's alpha value above 0.8 is generally considered good, implying that the items on this scale are reliably measuring the same underlying construct.

Unidimensional Reliability

The Reactive-Proactive Aggression Questionnaire (RPQ)	
Estimate	Cronbach's α
Point estimate	0.859

The Reactive-Proactive Aggression Questionnaire (RPQ) demonstrated high internal reliability, with a Cronbach's α of 0.859, indicating that the items within the scale consistently measure the same underlying construct of aggression. The use of pairwise complete cases ensures that incomplete data did not skew the results, further reinforcing the reliability of the findings. This suggests that the RPQ is a reliable tool for assessing proactive and reactive aggression in participants.

Descriptive Statistics-

Descriptives						
	Group	N	Mean	SD	SE	Skewı
gain scores Aggression	1	40	-2.050	8.776	1.388	-0.439
	2	41	-2.756	5.864	0.916	

Group 1: control group, Group 2: experimental group

Descriptive statistics for the gain scores on aggression revealed that both groups experienced a decrease in aggression levels following the intervention. However, Group 2 demonstrated a slightly larger reduction in aggression compared to Group 1. Additionally, Group 1 exhibited greater variability in individual scores, while Group 2 had a more consistent pattern of change.

Descriptives

	Group	N	Mean	SD	SE	Skewness	Kurtosis
gain scores Fantasy	1	40	0.850	12.563	1.986	- 0.285	1.661
	2	41	1.575	8.233	.302		

Group 1: control group, Group 2: experimental group

The results of the study suggest that both groups showed some improvement in fantasy scores, but the experimental group, which participated in the ecotherapy intervention, displayed a slightly greater increase. However, the differences between the two groups were not substantial enough to be considered statistically significant.

Assumption Checks

Test of Normality (Shapiro-Wilk)

		W	p
gain scores Fantasy	1	0.979	0.650
	2	0.910	0.004

Note. Significant results suggest a deviation from normality.

Test of Equality of Variances (Levene's)

	F	df1	df2	p
gain scores Fantasy	4.261	1	78	0.042

The Shapiro-Wilk test of normality was used to assess whether the gain scores for aggression followed a normal distribution. For Group 1 (Control Group), the test results indicated W = 0.967 and p = 0.278, suggesting no significant deviation from normality, meaning the data were normally distributed. In contrast, Group 2 (Experimental Group) showed W = 0.920 and p = 0.007, indicating a significant deviation from normality, so the data in this group were not normally distributed. Additionally, Levene's Test for equality of variances revealed F = 4.094, df1 = 1, df2 = 79, and p = 0.046. This significant result suggests that the variances between the control and experimental groups were not equal, violating the assumption of homogeneity of variances.

Mann-Whitney U Test

	Test	Statistic	df	p	Effect Size	SE Effect Size
Gain scores Fantasy	Mann-Whitney	745.000		0.600	-0.069	0.129

Note. For the Mann-Whitney test, effect size is given by the rank biserial correlation.

The Student's t-test statistic is -0.305 with 78 degrees of freedom (df), and the p-value is 0.761. A p-value greater than 0.05 suggests that there is no statistically significant difference between the two groups regarding their gain scores in Fantasy. The effect size (Cohen's d) is -0.068, which indicates a very small negative effect. This further reinforces the conclusion that the intervention's impact on fantasy scores was negligible. The Mann-Whitney U statistic is 745.000, with a corresponding effect size of -0.069. Similar to the t-test, this indicates a small effect, supporting the findings that there is no significant difference between the groups.

Mann-Whitney U test.			
	U	df	p
gain scores Aggression	848.000		0.795

Note. Mann-Whitney U test.

The p-value of 0.795 is considerably higher than the conventional threshold of 0.05. This suggests that there is no statistically significant difference between the aggression scores of the experimental group and the control group.

Discussion

The present study aimed to investigate the effect of a 7-day ecotherapy intervention on fantasy behavior and aggressive behavior in early school-aged children living in an urban environment. Inaugurated from the growing concern about the nature-deficit disorder, especially in urbanized environments, it was hypothesized that natural intervention might influence children's creativity, reducing their aggressive tendencies. Ecotherapy is a nature-based therapy widely recognized for its therapeutic value through a mix of activities like integrating nature-based activities to enhance mental well-being. Most of the studies that exist today indicate fantasy behavior and aggression among children, which are also not covered or explored much in non-Western regions such as India.

The study results indicate decreased aggression in both groups; however, the experimental one experienced a slightly greater and more stable decrease as opposed to the control group. Lower variation in Group 2 scores (SD = 8.233 compared to Group 1's SD = 12.563) may mean that some stabilizing effect of the intervention from the ecotherapy was induced. However, Shapiro-Wilk and Levene's tests revealed abnormality and variances homogeneity problems, respectively. There was no statistically significant difference observed in the fantasy gain scores using the t-test and Mann-Whitney U test ($p > 0.05$). These findings suggest that though ecotherapy is effective to reduce aggression, there is no significant impact on the fantasy of children, and therefore future research should address methodological limitations such as randomization, attentional span, and the disruption of environment. The internal consistency of the translated Marathi scale was strong, given the Cronbach's alpha value of 0.823. Similarly, the RPQ showed reliability with Cronbach's α value of 0.859. This shows that the

questionnaire is highly reliable and consistently measures aggression. The accuracy of the conclusion was ensured through pairwise complete cases as it minimizes the influence of missing data.

The study's findings showed that there were no statistically significant variations in hostility or fantasy behavior between the experimental and control groups. Although the experimental group showed slightly higher gain scores for fantasy and lower scores for aggression after participating in ecotherapy activities such nature walks, nature art, and imaginative play, the differences were not significant enough to indicate that the intervention had a significant effect. These outcomes challenge the initial hypotheses, which predicted significantly higher fantasy and lower aggression in the experimental group.

The absence of significant findings may be attributed to several factors. First, the brief 7-day duration of the intervention may not have been long enough to induce noticeable changes in children's behavior. Prior studies have demonstrated that longer-term exposure to nature, over weeks or even months, tends to yield more substantial benefits, particularly regarding emotional regulation and creativity (Louv, 2008; Wells & Evans, 2003). The short intervention period in this study might have limited the opportunity for children to fully engage with and benefit from nature's therapeutic potential.

Additionally, the study's urban setting in Pune, India, presents a unique cultural and environmental context that may differ from the predominantly Western settings where ecotherapy has been more extensively researched. In such urban environments, children's limited prior exposure to nature might have influenced their responsiveness to ecotherapy. Research suggests that children in highly urbanized areas often struggle to connect with nature due to unfamiliarity, which could diminish the effectiveness of short-term nature-based interventions White, M. P., Alcock, I., Grellier, J., Wheeler, B. W., Hartig, T., Warber, S. L., ... & Fleming, L. E. (2018).

The cultural lens also plays a crucial role. Fantasy play, as measured in this study, might manifest differently across cultures. Indian children may engage in fantasy play in ways that are less measurable through Western instruments like the Children's Fantasy Inventory (CFI), raising the question of whether the tools used were entirely suitable for capturing the cultural nuances of fantasy behavior in this population. Furthermore, aggression in children is influenced by multiple factors such as family dynamics, social pressures, and schooling environment, which may have overridden the subtle effects of ecotherapy in this short period.

The purposive sampling technique was one of the key limitations of this study because it prevented random selection of participants. In this case, therefore, more vulnerability to selection bias applies if any characteristics unique to that selected school or community are shared by participants. This kind of non-random sample gives the effect of reducing the generalizability of the findings, meaning results may not be correctly representative of the broader population of children in similar age groups.

Children aged 8-9 years old allegedly tend to have a shorter attention span, particularly in formal, test-taking contexts. Research findings show that the attention spans of young children, particularly in their first years at elementary school, typically fall between 15 to 20 minutes, following which their ability to focus thoroughly quickly decreases (Gathercole et al., 2008). This made it especially relevant when the test in question was the rather more complex and longer Children's Fantasy Inventory. When children were running through the test, fatigue may well have built up, causing frustrated responses, which could mean that the data is somehow invalidated. Testing fatigue is one of the known phenomena, and especially when testing younger participants, this can lead to inaccuracies in self-reported information, as children tend to lose track or become demotivated when answering thoughtful questions. This might be prevented in future studies through the shortening of the time for the assessment or including breaks.

One thing noticed was that some of the children's responses were patterned or repetitive; and, in so doing, the children clearly did not understand the questions. Pressure to respond could have caused them to fall into the trap of providing what they thought was "correct" or "acceptable" rather than actually reflecting their thoughts or experiences. Self-report measures are also susceptible to social desirability bias, which may be especially strong in young children who have been conditioned to oblige adult authority figures such as teachers or researchers. Some students may have prioritized answers that they perceived as "good" rather than honestly reporting. This would call for the creation of measures that limit response bias or offer elaboration on the supplementary use of observation-based assessments and self-reports.

One other key external factor to the intervention was weather: heavy rains poured over Pune during the period of the intervention, which affected most outdoor activities designed for the intervention. Ecotherapy per se is dependent on direct interaction with natural environments; thus, moving the activities indoors most probably diminished the intended therapeutic impact. Activities such as nature walks and cloud gazing, intended to engage children in sensory experiences of being outdoors, could not be fully done. The indoor setting may have mitigated any calming and restorative effects usually seen with this type of ecotherapy intervention. Future interventions should have flexible contingency plans that still provide meaningful nature-based engagement, even in adverse weather conditions.

Hence, the hypotheses, “Gain scores of Children’s Fantasy will be significantly higher in experimental group as compared to control group“and “Gain scores of Aggression will be significantly lesser in experimental group as compared to control group” were not supported. While the experimental group showed a minor reduction in aggression levels compared to the control group, this difference did not reach statistical significance. Similarly, although the experimental group exhibited a slight improvement in fantasy scores, the increase was not significant. These results suggest that while the ecotherapy intervention may have had some effect, the observed changes were insufficient to provide conclusive support for the hypotheses that the experimental group would show significantly greater gains in fantasy and significantly lower aggression than the control group.

Conclusion

The following chapter will include the overall summary of the present study. The findings, discussion, and summary of the statistical analysis will be addressed in connection to the study problem and hypotheses. It will also detail the study's conclusions and implications. Also, the strengths and limitations of the study are discussed. There is also discussion on the directions for future research.

Summary

The present study was conducted to study the effect of Ecotherapy on Children’s Fantasy and Aggression Among Early School-Aged Children.

Based on the literature, it was hypothesised that the Gain scores of Children’s Fantasy will be significantly higher in experimental group as compared to control group. And Gain scores of Aggression will be significantly lesser in experimental group as compared to control group.

The study sample consisted of early school-aged children (8 and 9 years old) from a school in Pune, Maharashtra, selected through purposive sampling. Data collection was conducted using two key instruments: the Children’s Fantasy Inventory (CFI) and the Reactive-Proactive Aggression Scale (RPQ),

both administered through paper-and-pencil methods. Statistical analysis was carried out using JASP software (Version 0.19.1).

The analysis compared two participant groups regarding their gain scores in fantasy and aggression. The findings indicated that while experimental group had a higher mean gain score, the overall consistency of scores was better in the control group. However, statistical tests showed no significant differences between the groups for either variable, suggesting that the intervention had a negligible effect on both fantasy and aggression scores. These results highlight the need for further exploration into the impact of such interventions on children's psychological outcomes. Hence, the following hypotheses were not supported-

1. Gain scores of Children's Fantasy will be significantly higher in experimental group as compared to control group.
2. Gain scores of Aggression will be significantly lesser in experimental group as compared to control group.

Conclusion

The study focused on examining the impact of ecotherapy on the fantasy and aggression levels of early school-aged children. The results indicated that while the experimental group had a higher average gain score in fantasy, the control group showed more consistent results. However, the statistical analysis revealed no significant differences between the two groups in either area, indicating that the ecotherapy intervention had little effect on the children's psychological outcomes. Consequently, the initial hypotheses regarding the significant improvement in fantasy and reduction in aggression in the experimental group were not supported. These findings highlight the importance of further investigations into the effects of ecotherapy on children's emotional and behavioral development.

Implications

Educational Applications:

1. Curriculum Development: Integrate nature-based activities and ecotherapy into school curricula to enhance imaginative play and reduce aggression. This could include structured outdoor play sessions, nature-themed classroom activities, and regular short nature walks.
2. Classroom Design: Develop classroom environments that incorporate elements of nature, such as indoor plants, natural light, and nature-themed decorations, to foster creativity and reduce aggressive behavior.
3. Teacher Training: Educate teachers about the benefits of ecotherapy and provide them with strategies for incorporating nature-based activities into their teaching methods. This can help in creating more engaging and less stressful classroom environments.

Psychological and Therapeutic Applications:

1. Therapeutic Programs: Design therapeutic programs or interventions for children experiencing aggression or difficulties with imaginative play. These could include nature therapy or nature-based play therapy to help manage aggression and enhance creativity.
2. Behavioral Management: Use ecotherapy as a tool for behavioral management in schools. Regular exposure to nature could be part of strategies to reduce aggressive behavior and promote positive social interactions.

Practical Applications:

1. Cost-Effective Interventions: Explore and implement low-cost ecotherapy interventions, such as digital nature sounds or virtual nature experiences, to make ecotherapy accessible even in settings where physical access to nature is limited.
2. Community Programs: Develop community-based programs that provide access to nature for children who might not have opportunities to experience it regularly. This could involve partnerships with local parks or nature centres.

Limitations of the study:

Translation of Tools: In order to guarantee that the Marathi-speaking students in Pune could completely understand the questions, translation of the measurement tools utilized in the study was necessary. Nonetheless, the process of translation could result in minute variations in interpretation or meaning, which could have an impact on the responses' validity and reliability.

Brief Intervention Period: Because the intervention lasted for only a short while (7 days), there was less time to see a noticeable change in behavior. An extended intervention could have yielded a more thorough comprehension of the long-term impacts on kids' behavior and mental health results.

Lack of Unstructured Play: The study did not include opportunities for unstructured play, which is often critical for children to express creativity, imagination, and natural play behaviors. The absence of such a component might have restricted the ability to fully explore how children engage with nature in a more spontaneous setting.

Student Biases and Developmental Limitations: Younger children in particular may not fully comprehend the questionnaire items due to immature cognitive development, particularly in the prefrontal cortex. This may lead to replies that are biased toward social desirability or that are random, which could introduce biases and compromise the validity of the study's conclusions. Small Sample Size: The study's very small sample size restricts how broadly the results may be applied. The robustness and external validity of the study's conclusions would be improved with a larger and more varied sample, which would also boost the ability to apply the findings to a larger population.

Suggestion for future studies:

1. Extend Intervention Duration: It may be worth considering a longer intervention period, ideally 21 days or more, to observe more pronounced and sustained effects on creativity, aggression, and fantasy behavior.
2. Incorporate Unstructured Play: Future studies could benefit from integrating unstructured play to allow for more natural interactions with nature, providing researchers with opportunities for participant observation and deeper insights into spontaneous imaginative play.
3. Self-Reported Measures for Children: Employing self-reported, age-appropriate tools like non-verbal or picture-based tests could yield more accurate data on children’s emotions and behaviors, reducing reliance on third-party reporting.
4. Use of Multiple Informants: Gathering data from a range of sources—such as parents, teachers, and peers—alongside self-reports from children, could help minimize bias and offer a more comprehensive view of behavioral changes.
5. Larger and More Diverse Samples: Expanding both sample size and diversity in terms of geographical, cultural, and socio-economic backgrounds could enhance the generalizability of findings across broader populations.

6. Examine Cognitive and Emotional Outcomes: Further studies could explore the cognitive and emotional effects of nature-based interventions, such as improvements in attention, emotional regulation, and problem-solving skills, to provide a fuller understanding of their developmental benefits.
7. Longitudinal Studies: Future research might explore the long-term impact of nature exposure through longitudinal studies, providing insight into how early experiences with nature influence cognitive and emotional development over time.
8. Mixed-Methods Approach: A combination of quantitative and qualitative methods, such as structured interviews and surveys, could offer richer, more nuanced insights into the effects of nature-based interventions on children's psychological development.
9. Ethical Considerations: Refining ethical protocols, especially in studies involving children, would help address potential biases and ensure that participants' well-being is prioritized throughout the research process.

Summary of the chapter:

This present study was done to investigate the effect of Ecotherapy on Children's Fantasy and Aggression Among Early School-Aged Children. The study employed Quasi Experimental pre-test and post-test, experimental control group Design. The findings revealed that although the experimental group displayed a higher mean gain score in fantasy, the control group exhibited more consistent results. Importantly, statistical tests indicated no significant differences between the groups regarding either variable, suggesting that the ecotherapy intervention had a negligible impact on children's psychological outcomes. Further, the implications, limitations and direction for future research were discussed.

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