**International Journal of Environmental Sciences**
ISSN: 2229-7359
Vol. 11 No. 21s, 2025
https://www.theaspd.com/ijes.php

# Nature-Based Approaches To Behaviour And Speech In Preschoolers

**Chanthuru. S[(1)*], Akshaya. A[(2)], Seethalakshmy. A[(3)], Deepthi Saligram[(4)]**

[(1)*]Assistant Professor, Department of psychology (Rathinam college of Arts and Science), Research Scholar (Garden City University),
[(2)] Assistant Professor, Department of psychology, Rathinam college of Arts and Science.
[(3)] Head, Department of Psychology, Rathinam College of Arts and Science.
[(4)] Professor, Department of Psychology, School of Sciences, Garden City University

**ABSTRACT:**
*Young children who lead sedentary lifestyles are at greater risk of experiencing speech delays and behavioural difficulties, which can hinder their social, emotional, and academic development. Research has shown that traditional classroom-based interventions, while widely used, often have limited success in addressing these issues, as they may lack the sensory richness, physical engagement, and contextual learning opportunities that support holistic growth. Nature-based therapy (NBT) has emerged as an alternative approach, integrating outdoor environments, physical activity, and interactive learning to foster developmental progress. This study examined the impact of a six-week NBT programme on preschool children aged 3–5 years in Tirupur, India, who were identified with behavioural challenges and speech delays. The intervention included structured activities such as storytelling in natural settings, guided nature walks, and sensory exploration, conducted three times a week. Behavioural outcomes were assessed using validated measures, and speech development was evaluated through standardized communication assessments. Findings indicated notable improvements in children's ability to regulate emotions, cooperate with peers, and express themselves confidently, alongside richer vocabulary and clearer speech patterns. These results align with existing literature suggesting that natural learning environments stimulate curiosity, encourage active participation, and provide meaningful social interactions, making NBT a promising complement or alternative to traditional preschool interventions.*

***Keywords:*** *Preschoolers, Speech Delay, Behavioural Issues, Nature-Based Therapy, Early Childhood Intervention.*

## INTRODUCTION

Preschool years (ages 3–5) represent a critical stage in child development, particularly for the acquisition of social communication, emotional regulation, and language skills. While most children progress smoothly through these milestones, a notable proportion estimated at 5–10%experience speech delays (ASHA, 2020) or behavioural challenges such as inattention, hyperactivity, and aggression. Speech delays may manifest as limited vocabulary, pronunciation difficulties, or poor sentence construction, often leading to frustration, social withdrawal, and reduced academic performance. Similarly, behavioural issues disrupt peer relationships, emotional regulation, and learning engagement.

Growing evidence suggests that early, holistic interventions are essential for addressing these developmental concerns. Nature-based therapies (NBT), also referred to as ecotherapy, integrate elements of the natural environment, such as parks, gardens, and outdoor sensory activities,into structured intervention programs. These approaches have been associated with improved emotional, cognitive, and social outcomes in young children. For example, Clipa et al. (2020) found that nature-based kindergarten settings significantly enhance preschoolers' social and emotional skills, while Saleh et al. (2018) reported that teaching in natural environments promotes healthier developmental trajectories.

Research in this domain consistently supports the value of outdoor learning environments in early childhood education. Novikova, Pic, and Han (2024) demonstrated that children in outdoor nature-based preschools use richer and more diverse language than their indoor counterparts. Johnstone et al. (2022), in a mixed-methods systematic review, linked nature-based programs to measurable gains in social, emotional, and cognitive development. Clipa and Cîmpan (2020) similarly highlighted the role of outdoor activities in strengthening

interpersonal skills and emotional resilience.

In addition to language and socio-emotional benefits, NBT has shown promise for children with specific developmental challenges. Kalashnikova et al. (2016) documented the efficacy of combined animal-assisted and plant-assisted therapies in improving speech outcomes in Arctic preschoolers, while Astuti, Efendi, and Rahman (2024) emphasized the importance of early detection and targeted nature-based interventions for speech delays. Studies by Maheswari and Samundeeswari (2018) and Rahim et al. (2023) further underscore the prevalence of behavioural concerns and the need for nurturing educational environments, which NBT can provide.

Beyond therapeutic gains, nature-based programs foster broader developmental qualities. Knox (2009) found that gardening activities enhance responsibility, patience, and environmental connection in preschoolers, while Rahim, Badzis, and Abdul Rahman (2020) noted that interacting with nature sparks joy, curiosity, and engagement. Collectively, this body of evidence positions NBT as a multidimensional, sustainable approach to early childhood development, capable of addressing speech and behavioural difficulties while promoting holistic growth.

The present study builds on this literature by evaluating the effectiveness of a six-week NBT program in reducing behavioural issues and mitigating speech delays among preschool children in India, applying a quasi-experimental pre-test/post-test design to provide empirical evidence for its implementation in early education settings.

**Objectives:**

To assess the effectiveness of nature-based therapies in reducing behavioral issues among preschoolers.

To evaluate the impact of nature-based therapies on improving speech and communication skills in preschoolers.

## METHODOLOGY:

Participants for this study were drawn from preschool centres in Tirupur. A total of 100 children, aged 3–5 years and diagnosed with behavioural issues and speech delays, were included. The sample comprised both boys and girls, and all participants completed the six-week intervention as well as the entire study procedure. Convenience sampling was employed for participant selection.

Behavioural assessment was conducted using the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997), a 25-item parent-report measure with five subscales. Speech and language development were evaluated using the Ages and Stages Questionnaire – Third Edition (ASQ-3; Squires & Bricker, 2009), focusing on the communication domain containing six items.

A quasi-experimental design with pre- and post-test measures was implemented to examine the effectiveness of nature-based therapies. Data analysis included descriptive statistics (mean, standard deviation) and paired t-tests to identify significant changes following the intervention.

## RESULT AND DISCUSSION:

Data analysis revealed that the six-week nature-based therapy programme had a significant positive impact on mitigating behavioural issues and speech delays in preschool-aged children.

For behavioural regulation, the paired t-test produced a t-value of 15.932 with a p-value of .000, indicating a highly significant reduction in behavioural difficulties after the intervention. Compared to their pre-intervention behaviours, children were observed to be calmer, more cooperative, and better able to adapt to group routines. Educators and parents noted improved patience, better turn-taking, and a decrease in impulsive actions. These behavioural improvements may be attributed to the therapeutic benefits of outdoor environments, which offer opportunities for active play, creativity, and positive peer interaction. The sensory-rich and open setting appeared to help children release excess energy in a constructive way while fostering emotional regulation key elements in addressing behavioural challenges.

For speech and communication skills, the paired t-test showed a t-value of -21.193 with a p-value of .000, reflecting substantial improvement after the programme. Children demonstrated richer vocabulary, clearer sentence formation, and increased confidence in expressing their thoughts. The nature-based activities such as storytelling in outdoor settings, guided nature walks, and collaborative sensory exploration created authentic opportunities for language use. These activities encouraged children to describe their surroundings, share experiences, and engage in meaningful conversations, which in turn contributed to reducing speech delays.

The results collectively indicate that nature-based therapy provides an effective, holistic approach to mitigating behavioural issues and speech delays in early childhood. The behavioural gains seem to arise from the calming and socially engaging aspects of natural environments, while the language improvements are supported by interactive, context-rich communication opportunities. Together, these benefits suggest that incorporating nature-based activities into early education can foster children's social, emotional, and academic growth in a way that traditional classroom interventions often cannot.

**TABLE.1** PAIRED T-TEST OF BEHAVIORAL ISSUES BEFORE AND AFTER INTERVENTION

| | Group | N | SD | t-value | df | p-value |
|---|---|---|---|---|---|---|
| BEHAVIORAL ISSUES | Before intervention | 50 | 4.104 | 15.932 | 49 | .000 |
| | After intervention | 50 | 2.015 | | | |

The result of paired t-test of Behavioral issues before and after intervention, t-value=15.932, the p- value is .000 and is less than 0.05, hence there is significant difference between before and after intervention of behavior among preschoolers.

The illustration in the following figure also depicts the same

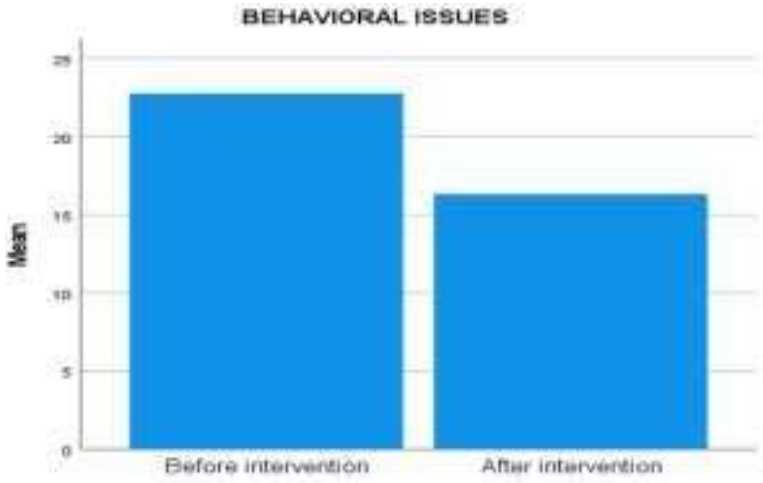



**TABLE.2** PAIRED T-TEST OF SPEECH DELAY BEFORE AND AFTER INTERVENTION

| | Group | N | SD | t-value | df | p-value |
|---|---|---|---|---|---|---|
| SPEECH DELAY | Before intervention | 50 | 6.893 | -21.193 | 49 | .000 |
| | After intervention | 50 | 4.738 | | | |

The result of paired t-test of Speech development before and after intervention, t-value= -21.193, the p-value is .000 and is less than 0.05, hence there is significant difference between before and after intervention of speech among preschoolers.

International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 21s, 2025
https://www.theaspd.com/ijes.php

The illustration in the following figure also depicts the same.

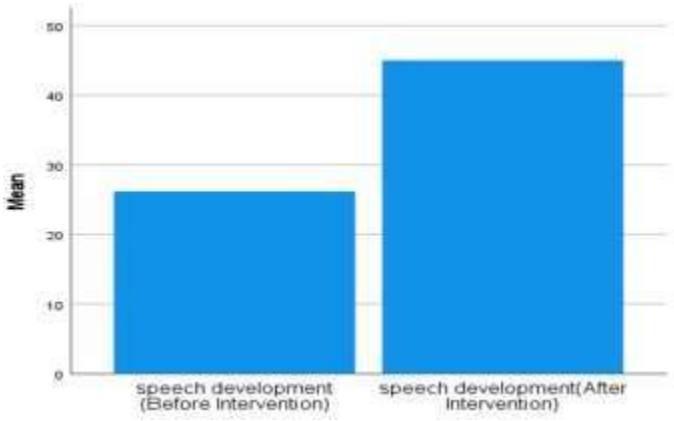
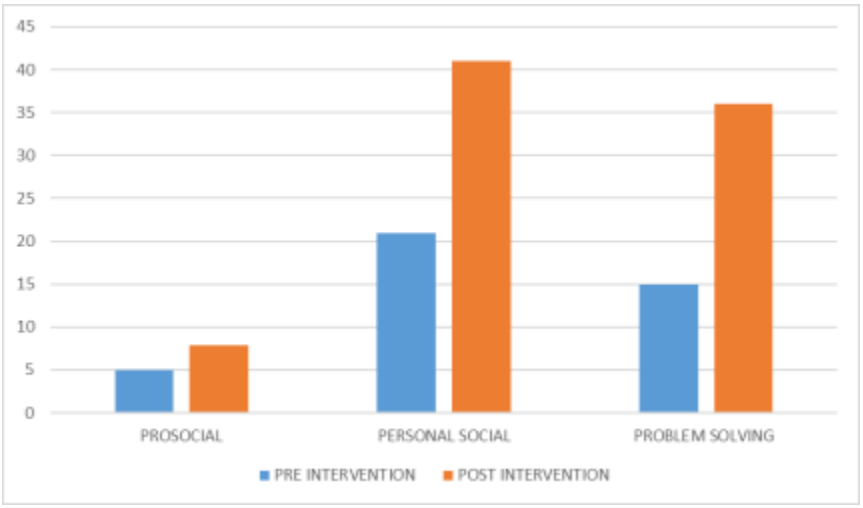



**TABLE 3** PAIRED T TEST OF DIMENSIONS BEFORE AND AFTER INTERVENTION

| | GROUP | MEAN | SD | t-value | df | P-value |
|---|---|---|---|---|---|---|
| PROSOCIAL | Pre-intervention Post intervention | -3.420 | 1.180 | -20.501 | 49 | .000 |
| PERSONAL SOCIAL | Pre-intervention Post intervention | -19.700 | 4.334 | -32.139 | 49 | .000 |
| PROBLEM SOLVING | Pre-intervention Post intervention | -21.800 | 6.528 | -23.614 | 49 | .000 |

The result of paired t test of dimensions of behaviour and speech before and after intervention. The first dimension is prosocial before and after intervention has p-value of .000 and is less than 0.05, hence there are significant differences between before and after intervention. The second dimension is personal social has a p-value of .000 and is less than 0.05, hence there exist significant difference between before and after intervention. The third dimension is problem solving has p-value of .000 and is less than 0.05, hence there exist significant difference between before and after intervention.

The illustration in the following figure also depicts the same.



The illustration in the following figure shows the results of paired t-test of dimensions of behaviors and speech before and after intervention. As shown, there is significant difference in dimensions before and after intervention.

## CONCLUSION:

This study shows that nature-based therapy can play a significant role in improving behaviour and speech among preschool children. Engaging in structured outdoor activities—such as storytelling in natural settings, guided nature walks, and sensory play—provided children with opportunities to self-regulate, interact positively with peers, and express themselves with greater confidence and clarity. The combination of movement, sensory experiences, and real-world context appeared to foster both language growth and emotional resilience. Beyond building vocabulary, these experiences encouraged cooperation, patience, and curiosity, which are essential foundations for future learning. Incorporating such approaches into preschool programmes may offer a proactive way to address developmental challenges early, reducing the need for more intensive interventions later. Further studies could investigate the long-term impact of nature-based learning and explore its adaptability for diverse educational contexts, including inclusive classrooms.

## LIMITATION:

The survey was relatively small and focused on a specific preschool setting, which may limit the generalizability of the findings to a broader population. The data collected was also restricted to a certain age group. No equal distribution of male and female.

## ETHICAL CONSIDERATIONS:

The study was designed to protect the safety, comfort, and rights of the children at every stage. Activities were age-appropriate, supervised by trained staff, and carried out in a safe, supportive environment. All personal details were kept confidential, and data was stored securely. Ethical clearance was obtained before starting the research.

## INFORMED CONSENT:

As the participants were minors, the consent were received from parents/guardians. Parents or guardians were given clear information about the purpose, activities, and duration of the study. Participation was voluntary, and they could withdraw their child at any time without consequence. Written consent was obtained, ensuring that all shared data remained anonymous.

## AUTHORS' CONFLICT OF INTEREST:

The authors declare that they have no conflicts of interest related to this study. No financial, personal, or professional relationships influenced the design, conduct, or reporting of the research.

## REFERENCES

1. Abd Rahim, M. H., Ibrahim, M. I., Ab Rahman, A., Yaacob, N. M., &Hashim, N. S. F. (2023, June). Emotional And Behavioural Problems Among Preschool Children In Northeast Peninsular Malaysia: Parent Report Version. In Healthcare (Vol. 11, No. 13, P. 1828). MDPI.
2. Abd Rahim, S. N. F., Badzis, M., & Abdul Rahman, N. S. N. (2020, December). How Do Children Experience Nature At Preschool? A Preliminary Study. In 4th UUM International Qualitative Research Conference (QRC 2020), December 2020 (Pp. 135-147).
3. Astuti, A. K., Efendi, M., & Rahman, D. H. (2024). Early Detection And Treatment Speech Delay Children Of Preschool Age (Multi-Site Study Of 3 Preschool Institutions In Malang City). Jurnalmultidisiplinmadani, 4(1), 132-139.
4. Clipa, O., &Cîmpan, E. (2020). Social-Emotional Competences Of Preschoolers: The Impact Of Outdoor Educational Activities (P. 148). Peter Lang International Academic Publishers.
5. Johnstone, A., Martin, A., Cordovil, R., Fjørtoft, I., Iivonen, S., Jidovtseff, B., Lopes, F., Reilly, J. J., Thomson, H., Wells, V., Et Al. (2022). Nature-Based Early Childhood Education And Children's Social, Emotional And Cognitive Development: A Mixed-Methods Systematic Review. International Journal Of Environmental Research And Public Health.

6. Kalashnikova, I. V., Gontar, O. B., Zhirov, V. K., & Kalashnikov, A. O. (2016). Integrated Animal- Assisted And Plant-Assisted Ecotherapy For Preschool Children With Speech Disturbances: A Program For The Arctic. Ecopsychology, 8(2), 79-88.
7. Knox, A. (2009). Nature And Children: The Effects Of Gardening On Preschoolers. Southern Connecticut State University.
8. Maheswari, K., &Samundeeswari, A. (2018). Prevalence Of Preschooler Behavioural Problems. Asian Pacific Journal Of Health Science, 5(4), 129-135.
9. Novikova, E., Pic, A., & Han, M. (2024). Language Use In Indoor And Outdoor Settings Among Children In A Nature-Based Preschool. Environmental Education Research, 30(1), 138-152.
10. Saleh, S. F., Latip, N. S. A., & Rahim, A. A. (2018). Assessment Of Learning With Nature In Preschool. Planning Malaysia, 16.