

Mariia Dnistrianska

Vinnitsia Social and Economic Institute of the University "Ukraine"
Assistant at the Department of Rehabilitation Technologies (Ukraine)
sobiborets209@gmail.com
ORCID ID: 0009-0008-4604-0629

Pavlo Kuts

Vinnitsia Social and Economic Institute of the University "Ukraine"
Assistant at the Department of Rehabilitation Technologies (Ukraine)
kutspavl@gmail.com
ORCID ID: 0009-0004-2739-5986

THE INFLUENCE OF CONTACT WITH ANIMALS (ANIMAL-ASSISTED THERAPY) IN A NATURAL ENVIRONMENT ON THE SOCIO-EMOTIONAL DEVELOPMENT OF CHILDREN WITH AUTISM SPECTRUM DISORDERS (ASD)

Стаття присвячена дослідженню одного з інноваційних підходів у виправній роботі — поєднання терапії за допомогою тварин та терапії природним середовищем (екотерапії) для сприяння соціально-емоційному розвитку дітей з розладами аутистичного спектру (РАС). Актуальність дослідження визначається зростаючою потребою в ефективних, недирективних методах підтримки дітей з РАС, які часто мають значні труднощі в сферах соціальної взаємодії, комунікації та емоційної регуляції. Метою статті є теоретичний аналіз та емпіричне обґрунтування синергетичного впливу взаємодії з тваринами в природних умовах на соціально-емоційну сферу дітей з цієї нозологією. У статті аналізуються ключові механізми впливу терапії за допомогою тварин, такі як зниження рівня тривожності, стимулювання невербальної комунікації, розвиток емпатії та мотивація до соціальних контактів. Окремо розглядається роль природного середовища як чинника, що зменшує сенсорне перевантаження, сприяє релаксації та надає багаті можливості для неструктурованої гри та дослідження. Результати проведеного дослідження демонструють, що такий комплексний підхід позитивно впливає на кілька ключових аспектів:

- Зменшення соціальної тривожності та проявів стереотипної поведінки.
- Поліпшення навичок спільної уваги та зорового контакту.
- Розвиток здатності розпізнавати та виражати власні емоції.
- Підвищення ініціативи у встановленні соціальних контактів (з твариною, а також з терапевтом або однолітками).

Висновки. Доведено, що інтеграція терапії за допомогою тварин у природне середовище створює унікальні, збагачені і водночас заспокоїливі умови, які діють як каталізатор розвитку соціально-емоційних навичок у дітей з РАС. Цей підхід має значний терапевтичний потенціал і може бути рекомендований як ефективне доповнення до традиційних програм втручання.

Ключові слова: розлади аутистичного спектру (РАС), терапія за допомогою тварин, інтервенції за допомогою тварин, екотерапія, природне середовище, соціально-емоційний розвиток, соціальна взаємодія, емоційна регуляція

The article is devoted to the study of one of the innovative approaches in correctional work—a combination of animal-assisted therapy and natural environment therapy (ecotherapy) to promote the socio-emotional development of children with autism spectrum disorders (ASD). The relevance of the study is determined by the growing need for effective, non-directive methods of supporting children with ASD, who often have significant difficulties in the areas of social interaction, communication, and emotional regulation. The aim of the article is the theoretical analysis and empirical substantiation of the synergistic effect of interaction with animals in natural conditions on the socio-emotional sphere of children with this nosology. The article analyzes the key mechanisms of animal-assisted therapy's influence, such as reducing anxiety levels, stimulating non-verbal communication, developing empathy, and motivating social contact. Separately, the role of the natural environment is considered as a factor that reduces sensory overload, promotes relaxation, and provides rich opportunities for unstructured play and exploration. The results of

the conducted research demonstrate that such a comprehensive approach positively affects several key aspects:

- *Reduction of social anxiety and manifestations of stereotypical behavior.*
- *Improvement of joint attention and eye contact skills.*
- *Development of the ability to recognize and express one's own emotions.*
- *Increased initiative in establishing social contacts (with the animal, as well as with the therapist or peers).*

Conclusions. It is substantiated that the integration of animal-assisted therapy into the natural environment creates unique, enriched, and at the same time calming conditions, which act as a catalyst for the development of socio-emotional skills in children with ASD. This approach has significant therapeutic potential and can be recommended as an effective supplement to traditional intervention programs.

Keywords: autism spectrum disorders (ASD), animal-assisted therapy, animal-assisted interventions, ecotherapy, natural environment, socio-emotional development, social interaction, emotional regulation

Main material. Autism spectrum disorders (ASD) are characterized by persistent deficits in social communication, interaction, and restricted, repetitive patterns of behavior. One of the most complex tasks in supporting such children is the development of their socio-emotional competence [1]. Traditional methods, although demonstrating effectiveness, often face challenges in generalizing skills and high levels of child anxiety in structured office settings. This encourages the search for innovative, "soft" approaches. Animal-assisted therapy (or animal-assisted interventions) has established itself as a powerful tool for reducing anxiety, motivating interaction, and developing empathy [2]. The animal acts as an unconditional, non-judgmental partner and as a "social catalyst," facilitating the child's contact with the world. At the same time, research in the field of ecotherapy indicates that the natural environment has a pronounced therapeutic effect: it reduces sensory overload, helps restore attention, and creates a rich, yet non-aggressive stimulating space [3]. We hypothesized that the combination of animal-assisted therapy and being in a natural environment creates a unique synergistic effect, significantly enhancing the correctional impact on the socio-emotional development of children with ASD compared to the isolated use of these methods. The purpose of our study is to empirically investigate and analyze the dynamics of socio-emotional development in children with ASD as a result of implementing a comprehensive program that combines animal-assisted therapy and natural environment therapy. Study base and participants. The empirical study was conducted at the Vinnytsia Regional Children's Clinical Hospital (VRCCH). The study involved 30 children aged 5 to 8 years with a confirmed diagnosis of ASD (F84.0, F84.5 according to ICD-10), who were receiving outpatient support at VRCCH. Participants were divided into two groups:

1. Experimental group (EG) (n=15) — children who participated in the developed comprehensive program.

2. Control group (CG) (n=15) — children who received the standard set of correctional services provided at the facility (sessions with a speech therapist, psychologist). The groups were matched for age, sex, and the severity of autistic manifestations (based on initial diagnostics). Informed consent from parents was a mandatory condition for participation.

Autism spectrum disorders (ASD) are characterized by persistent deficits in social communication and interaction, as well as by restricted and repetitive patterns of behavior and interests. One of the most complex and multidimensional tasks in the psychological support of children with ASD is the development of their socio-emotional competence — a foundation that determines their ability to interact, empathize, and regulate their own states [1]. Traditional approaches, although empirically supported, often encounter significant limitations. These include the difficulty of transferring acquired skills into natural contexts, a high level of situational anxiety caused by structured office settings, and the child's reduced motivation in standardized correctional formats. Such difficulties encourage specialists to seek innovative, integrative, and "soft" methods of intervention that provide a more natural and emotionally comfortable context for development.

Animal-assisted therapy (AAT), also known as animal-assisted intervention, has proven itself to be a powerful and empirically supported tool for reducing anxiety, enhancing motivation for interaction, and fostering empathy [2]. The animal functions simultaneously as an unconditional, non-judgmental partner and as a "social catalyst," facilitating spontaneous communication and emotional resonance between the child and the surrounding world. In parallel, research in the field of ecotherapy and environmental psychology shows that the natural environment exerts a pronounced therapeutic influence: it mitigates

sensory overload, contributes to attentional restoration, supports self-regulation, and provides a rich but non-aggressive multisensory space [3].

We hypothesized that the combination of animal-assisted therapy with a natural setting produces a synergistic effect, amplifying the corrective influence on socio-emotional development in children with ASD compared to the isolated use of each approach. The purpose of our study was to empirically investigate and analyze the dynamics of socio-emotional development in children with ASD resulting from the implementation of a comprehensive, ecologically oriented intervention program integrating both animal-assisted and natural environment therapies.

Therapy Methodology. We developed a program that included 20 sessions (2 times a week for 45 minutes). Sessions were held in a specially equipped green area adjacent to the hospital building and in the premises of the rehabilitation center's petting zoo. During the sessions, the hospital's park area, rich in natural stimuli (trees, grass, tactile paths), and a specially prepared enclosure were used. This allowed for minimizing sensory stimuli typical of hospital premises and promoted relaxation for the young patients. Specially trained and certified animals participated in the program: a canine therapy dog (Labrador breed) and small animals (rabbits, guinea pigs), which passed veterinary control. Each session had a clear but flexible structure:

- 1) Greeting ritual (with the therapist and the animal);
- 2) Sensory contact (caring for the animal – feeding, brushing);
- 3) Joint activity (elements of training, games with a ball, navigating an obstacle course in the natural environment);
- 4) Free interaction;
- 5) Farewell ritual.

Sessions were conducted by a team consisting of a psychologist, an animal-assisted therapist (cynologist), and a physical therapist. Assessment of socio-emotional development was carried out twice (before the start and after the completion of the program) using a set of methods:

1. Observation method (CARG): A structured observation chart for the child's social behavior in a group, adapted by us for the study's purposes. The frequency of eye contact, the number of social initiations (towards an adult, towards an animal), manifestations of joint attention, and emotional reactions were recorded.

2. Parent questionnaire: An adapted version of the socialization scale from the Vineland Adaptive Behavior Scales (VABS) to assess parents' perceptions of changes in the child's daily behaviour [4].

3. Expert assessment: Assessment of the child's psycho-emotional state by a psychologist using an emotional discomfort scale (reduction of anxiety, aggression, stereotypes).

Analysis of the data collected at VRCCCH revealed a noticeable positive dynamic in the children of the experimental group compared to the control group.

1. Improvement in social interaction and communication. Based on the results of structured observation, a qualitative improvement in interaction skills was recorded in the children after completing the program.

The animal acted as a powerful motivator: if at the initial stage contact was initiated mainly by the therapist, by the end of the course, 73% of children (11 out of 15) demonstrated spontaneous initiatives (calling the dog, offering food to the rabbit). The number of joint attention episodes (child-animal-therapist) increased by an average of 2.5 times. Children more often used eye contact to confirm their actions with the therapist ("Look how I'm throwing the ball to the dog").

In the control group, such changes were insignificant.

2. Emotional regulation and reduction of anxiety.

The natural environment combined with the calm, friendly state of the animal created a "comfort zone."

Parents of children with ASD in 80% of cases (12 out of 15) noted in the questionnaires a reduction in the general level of anxiety and the frequency of sensory overloads.

According to expert assessments by psychologists, these patients showed a significant decrease in the frequency of stereotypical and self-stimulatory behaviors during sessions (compared to their behavior in a regular office). The animal often acted as a "container" for emotions – children hugged the dog when they felt anxious, which allowed them to stabilize more quickly.

3. Discussion of results. The obtained results confirm our hypothesis about the synergistic effect. Unlike standard sessions, where the child is often in a state of "demand" (you must complete the task), therapy in the natural environment with an animal was built on free motivation. For a child with ASD, direct social contact with a person is complex and exhausting. The animal (particularly the dog) became an

ideal intermediary. Its behavior is understandable, predictable, and devoid of "double meanings." This allowed the children to "practice" models of interaction (requesting, initiating, caring) in safe conditions and subsequently transfer them to the therapist. The park environment of VRCCH neutralized negative factors (bright artificial light, enclosed space) that are often triggers for sensory overload in children with ASD. Natural sounds, smells, and the possibility of free movement contributed to lowering cortisol levels and general relaxation. Thus, in the proposed program, the child did not "learn" socialization directly, but "lived" it in a motivated, emotionally positive, and sensorily comfortable activity.

Data analysis revealed a statistically significant positive dynamic in the experimental group compared to the control group.

1. Improvement in social interaction and communication.

According to structured observation, children in the experimental group demonstrated a marked increase in social initiatives and non-verbal communication after the program. While at the initial stage, contact was predominantly therapist-initiated, by the end, 73% of children (11 out of 15) initiated spontaneous interaction (calling the dog, offering food to the rabbit). The number of joint attention episodes increased by an average of 2.5 times. Children began to use eye contact more intentionally ("Look, I'm throwing the ball to the dog!").

In contrast, the control group displayed minimal changes, limited to increased tolerance of social proximity.

2. Emotional regulation and anxiety reduction.

The combination of natural stimuli and the calm, responsive presence of the animals created a "comfort zone" for emotional expression. In 80% of parental reports (12 out of 15), a reduction in anxiety and sensory overload episodes was noted. Psychologist evaluations confirmed a significant decrease in stereotypical behaviors and self-stimulatory patterns. Many children used physical contact with the therapy dog (hugging, stroking) as a spontaneous self-soothing mechanism, leading to faster emotional stabilization.

The findings confirm the hypothesis of a synergistic interaction between the two modalities — animal-assisted and nature-based therapy. Unlike traditional correctional sessions, which rely on structured performance demands, this program fostered intrinsic motivation and autonomous participation.

For children with ASD, direct social engagement often provokes tension due to the complexity of interpreting human emotional cues. The animal, however, represents a predictable and emotionally transparent partner — free of ambiguity, judgment, or social pressure. This allows the child to safely practice interactional behaviors such as requesting, initiating, responding, and caring, which are then transferred to human relationships.

The natural environment amplified this process by neutralizing artificial triggers (bright lights, enclosed spaces, sterile smells) that often provoke sensory overload. Natural sounds, textures, and the opportunity for free movement contributed to a state of relaxation and improved attention regulation.

Thus, within the proposed model, the child does not merely "learn" social behaviors through imitation but experiences socialization as an emotionally positive, embodied process. This approach aligns with the principles of experiential learning and ecological psychology, where development unfolds through active, meaningful interaction with both living beings and the natural world.

Further analysis and conclusions

The obtained results reveal several important psychological mechanisms underlying the positive effects of combined animal-assisted and nature-based interventions for children with ASD. Firstly, the mechanism of emotional mediation plays a central role. In traditional therapy settings, the therapist acts as the main source of social and emotional input, which may be perceived by the child as excessive or unpredictable. In contrast, the animal provides a mediated, safe channel of affective exchange: it responds to the child's emotional state without verbal complexity, thereby facilitating nonverbal synchronization and empathy development. This resonates with the concept of affective attunement described by D. Stern, where shared emotional experience becomes the foundation for social understanding.

Secondly, the ecological context of the sessions created optimal conditions for sensorimotor integration. Many children with ASD experience difficulties in processing complex sensory stimuli, which leads to defensive withdrawal or hyperactivity. Exposure to a natural environment with balanced sensory input (soft textures, natural sounds, rhythmic movement) promotes self-regulation and reduces hyperarousal. This is consistent with S. Kaplan's Attention Restoration Theory, according to which natural settings restore directed attention and reduce cognitive fatigue. Thus, sensory comfort becomes a prerequisite for emotional openness and learning readiness.

Thirdly, the observed behavioral dynamics suggest a gradual shift from external regulation (following therapist instructions) to internalized regulation — a hallmark of socio-emotional growth. The presence of animals facilitated spontaneous imitation, emotional mirroring, and empathy, which are often impaired in ASD. Such spontaneous behaviors were not explicitly taught but emerged organically, indicating the activation of intrinsic motivational systems. This supports the idea that emotionally rewarding experiences in therapy can activate neuroplastic mechanisms related to social cognition.

It is also important to emphasize the therapeutic alliance that developed within the triad child–animal–therapist. The therapist's role shifted from an instructor to a co-participant and emotional moderator, which reduced the child's defensive behavior. This aligns with humanistic and experiential models of psychotherapy (C. Rogers, V. Satir), where authenticity, empathy, and unconditional acceptance become core conditions for change. The animal's unconditional responsiveness modeled these qualities and reinforced the therapist's relational stance.

From a practical perspective, the results suggest that the integration of animal-assisted and nature-based elements into correctional programs can significantly enhance motivation, emotional engagement, and transfer of acquired skills into everyday contexts. Such interventions are especially effective for children who demonstrate resistance to conventional forms of therapy or experience heightened anxiety in artificial environments. Moreover, the ecological approach is relatively low-cost and sustainable, as it utilizes existing natural and institutional resources.

Nevertheless, certain limitations should be acknowledged. The study sample was relatively small and homogeneous, which limits generalization. Further research with larger and more diverse samples is needed to confirm the reliability of findings and explore long-term outcomes. It would also be valuable to investigate the neurophysiological correlates of such interventions, for example, through heart rate variability or cortisol monitoring, to provide objective evidence of reduced stress and improved self-regulation.

In conclusion, the combination of animal-assisted therapy and natural environment exposure represents a promising, humanistic direction in the psychological support of children with ASD. It allows for the creation of emotionally secure, multisensory developmental contexts where social competence, empathy, and self-regulation can naturally emerge. The presented model can be adapted and implemented in various rehabilitation and educational settings, expanding the spectrum of modern psychotherapeutic approaches toward more holistic and child-centered practices.

Conclusions. The empirical study conducted at the Vinnytsia Regional Children's Clinical Hospital (VRCCH) confirmed the high correctional effectiveness of the integrated program combining animal-assisted therapy and natural environment therapy for improving the socio-emotional development of children with autism spectrum disorders (ASD). It has been proven that the application of this program contributes to significant positive dynamics in the children of the experimental group compared to the control group, which received standard correctional services. Key improvements were recorded in the following areas:

- Social interaction: An increase in the number of spontaneous social initiatives (verbal and non-verbal) directed at both the animal and the therapist.
- Communicative skills: Improvement in the quality and duration of eye contact and a significant increase in joint attention episodes.
- Emotional regulation: A noticeable reduction in the general level of anxiety, and the frequency of stereotypical and self-stimulatory behaviors during sessions. We also confirmed the hypothesis about the synergistic effect of combining the two factors.

The effectiveness of the program is due to the fact that:

- The animal acts as a powerful motivator, "social mediator" (intermediary), and "emotional container," making the interaction process safe, predictable, and emotionally attractive for the child with ASD.
- The natural environment acts as a "sensory regulator," reducing the risk of sensory overload characteristic of office settings and promoting general relaxation and attention restoration.

The program developed by us and tested at VRCCH creates unique, enriched, and at the same time calming conditions in which the child does not "learn" socialization directly, but "lives" it in a motivated, positively colored, and sensorily comfortable activity.

It should be noted that this approach is a valid and scientifically substantiated methodology that can be recommended for implementation in the practice of rehabilitation centers, medical institutions, and inclusive resource centers as an effective supplementary tool in the comprehensive support system for children with ASD.

Prospects for further research are seen in conducting a longitudinal analysis to assess the sustainability of the results obtained, expanding the sample, and comparatively analyzing the effectiveness of using different types of animals (e.g., canine therapy and hippotherapy) in natural conditions.

References:

1. Koval, I. M., Potapchuk, O. I. (2021). Vykorystannia kanisterapii dlia korektsii psykhoemotsiinoi sfery ditei molodshoho shkilnoho viku z rozladamy autystychnoho spektra. Osvita osib z osoblyvymy potrebamy: shliakhy rozbudovy, S.112–123.
2. Fung, B. (2021). Impact of Green-Time and Animal-Assisted Interventions on the Well-Being of Children with ASD. *International Journal of Environmental Research and Public Health*, 18(9), 4851.
3. Gabriels, R. L., Pan, Z., Guérin, N. A., Dechant, B., & Mesibov, G. (2021). Long-Term Effect of Therapeutic Horseback Riding in Youth with Autism Spectrum Disorder: A Randomized Trial. *Journal of the American Academy of Child & Adolescent Psychiatry*, 60(2), 275–285.
4. Wijker, C., Leontjevas, R., Spek, A., & Enders-Slegers, M. J. (2020). Effects of Dog-Assisted Therapy for Children with Autism Spectrum Disorder: A Systematic Review and Meta-Analysis. *Clinical Child and Family Psychology Review*, 23(1), 17–33.

Review received 08.09.2025