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THE EFFICIENCY OF ANIMAL-ASSISTED THERAPY FOR CHILDREN WITH AUTISM SPECTRUM DISORDERS

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Abstract
Although there is a growing body of evidence showing the potential of animal-assisted (AAT) therapy use with various populations, there is still a limited amount of such studies in Lithuania. This article continues the construction of the scientific discourse of animal-assisted therapy in Lithuania. The purpose of the study was to evaluate the efficiency of animal-assisted therapy for children with autism spectrum disorders. The study aimed to evaluate the efficiency of animal-assisted therapy not only from the therapist's viewpoint but also from the parents' perspective. Specific objectives included: 1) to evaluate parents' perception of their children's performance and satisfaction level in the areas selected by parents of self-care, productivity and leisure before and after animal-assisted therapy sessions; 2) to measure the effectiveness of animal-assisted therapy sessions in language/communication, sociability, sensory/cognitive awareness, and health/behaviour perceived by the parents; 3) to evaluate and compare parents' perceived behavioural-emotional difficulties before and after animal-assisted therapy sessions; and 4) to monitor and compare behavioural changes in children during and after animal-assisted therapy sessions .The sample consisted of nine children with a diagnosis of autism spectrum disorder. The results from two measurement methods provide support for the efficacy of animal-assisted therapy. The average scores of performance and satisfaction in targeted problem areas are higher in both groups of participants after animal-assisted therapy sessions as indicated by the parents. The parents of all participants indicated lower scores in speech/language, sociability, sensory/cognitive awareness and healthy/physical behaviour, which indicate fewer problems in these areas. Parents evaluate children's aggressive behaviour and externalising problems as significantly lower after animal-assisted therapy sessions. The scores of emotional problem scales are slightly higher after therapy, but the difference is not statistically significant. Parents tend to notice changes in behavioural problems more than emotional. The behavioural changes monitored by therapists varied in each session. The monitoring of behavioural changes in each session cannot indicate stable qualitative growth or decline as the results are sensitive to the inner states of children. Change of behaviour scores in each session showed that animal-assisted therapy sessions were beneficial to older as well as to younger participants.
KEY WORDS: animal-assisted therapy; autism spectrum disorder (ASD); animal-assisted intervention; behavioural-emotional difficulties.

Anotacija
Nors gausėja įrodymų, pagrindžiančių gyvūnų asistuojamosios terapijos taikymo įvairioms populiacijoms galimybes, Lietuvoje tokių tyrimų vis dar yra nedaug. Šis straipsnis tęsia mokslinio diskurso apie gyvūnų asistuojamąją terapiją konstravimą Lietuvoje. Vykdytu tyrimu siekta įvertinti gyvūnų asistuojamosios terapijos taikymo autizmo spektro sutrikimą turintiems vaikams efektyvumą ne tik terapeuto, bet ir tėvų požiūriu. Konkretūs tikslai: 1) įvertinti, kaip tėvai suvokia savo vaikų veiklos

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atlikimo efektyvumo ir pasitenkinimo lygį tėvų pasirinktais savirūpos, produktyvumo ir laisvalaikio aspektais prieš ir po gyvūnų asistuojamosios terapijos pratybų; 2) įvertinti tėvų suvokiamą gyvūnų asistuojamosios terapijos pratybų efektyvumą bendravimo, socialiniu, sensorinio / kognityvinio sąmoningumo ir sveikatos / elgesio aspektais; 3) įvertinti ir palyginti tėvų suvokiamus elgesio emocinius sunkumus prieš ir po gyvūnų asistuojamosios terapijos pratybų; 4) stebėti ir palyginti vaikų elgesio pokyčius per gyvūnų asistuojamosios terapijos pratybas ir joms pasibaigus. Imtį sudarė 9 vaikai, kuriems diagnozuotas autizmo spektro sutrikimas. Dviejų matavimo metodų rezultatai patvirtina gyvūnų asistuojamosios terapijos veiksmingumą. Tėvų nurodyti vidutiniai atlikimo efektyvumo ir pasitenkinimo balai tiksliniais probleminiais aspektais yra aukštesni abiejose dalyvių grupėse po gyvūnų asistuojamosios terapijos pratybų. Visų dalyvių tėvai nurodė žemesnius balus kalbos / bendravimo, socialumo, sensorinio / kognityvinio sąmoningumo ir sveiko / fizinio elgesio aspektais, tai rodytų esamus mažesnius sunkumus šiose srityse. Tėvų įvertinimai pagal agresyvaus elgesio ir eksternalių problemų skales statistiškai po gyvūnų asistuojamosios terapijos pratybų reikšmingai žemesni. Emocinių problemų skalių įverčiai po pratybų šiek tiek didesni, tačiau skirtumas statistiškai nereikšmingas. Tėvai vaikų elgesio pokyčius pastebi dažniau nei emocinių sunkumų įveikimo. Terapeuto stebimi elgesio pokyčiai kiekvienoje sesijoje skyrėsi. Jų stebėjimas kiekvienoje sesijoje negali rodyti stabilios kokybinių vaiko elgesio pokyčių pažangos ar prastėjimo, nes vykstant pratyboms tai priklauso nuo vaiko vidinės būsenos. Elgesio balų kaita kiekvienoje sesijoje parodė, kad gyvūnų asistuojamosios terapijos pratybos buvo naudingos ir vyresniems dalyviams.
PAGRINDINIAI ŽODŽIAI: autizmo spektro sutrikimas, gyvūnų asistuojamoji intervencija, gyvūnų asistuojamoji terapija, elgesio emociniai sunkumai.
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Introduction

The autism spectrum disorder (ASD) also known as pervasive developmental disorder (PDD) is a neurodevelopmental childhood condition that could be presented with mild to severe dysfunction, characterised by difficulties in social behaviour and communication, restrictive interests, and repetitive activities (American Psychiatric Association, 2013).

One of the most extensive and active areas of research in the field of pervasive developmental disorders is autism, and the most important feature of autism spectrum disorders (ASD) is the lack of social and emotional functioning (Grigore, Bazgan, 2017). Impairments of social development associated with communication deficits, restricted interests and repetitive behaviours constitute the triad of autistic disorder. Individuals with autism have difficulty interacting with others, as well as using and interpreting non-verbal communication. Social impairments have been regarded as primary deficits by several authors, since they are among the first symptoms of autistic disorders (e.g. difficulty in participating in imitative or pretend play). These impairments can limit a child's ability to form relationships, and can impact all aspects of their life, including familial and peer relationships, community access, academic performance, and job candidacy (Berry et al., 2013). Tailored interventions are needed to address individual complex symptom presentations (Tanner et al., 2015).

AAIs (animal-assisted interventions) are sessions with therapeutic, health and/or wellbeing goals which involve the presence of an animal. There are different types of AAIs, such as animal-assisted therapy (e.g. animal-assisted play therapy), animal-assisted activities (e.g. therapy animal visits to nursing homes), and animal-assisted education (i.e. completing tasks with therapy animals to improve educational outcomes). Animal-assisted therapy (AAT) is characterised by a professional therapist incorporating an animal in an intervention to achieve predetermined goals (Friedmann et al., 2010). According to Fine (2006), AAT is considered as a set of second procedures of a basic therapeutic treatment, not a treatment by itself. It has been suggested that individuals benefit from the therapeutic qualities of the animal as intuitive, non-judgmental and non-verbal communicators (Grandin et al., 2010).

Studies on the use of AAI in children have focused on attention deficit and hyperactivity disorder, emotional and behavioural disorders, language and speech disorders, learning disabilities, cerebral palsy, psychiatric problems, children with developmental delay and chronic disease, and autism spectrum disorder (ASD) (O'Haire, 2013). Reviews of the literature have found preliminary support for AAT for children with autism spectrum disorder (ASD), and positive outcomes in symptom reduction have been reported (Berry et al., 2013; Christon et al., 2010; O'Haire, 2013). Research shows that autistic children seek interaction with animals more often than with humans and inanimate objects. It might be easier to understand animals' intentions non-verbally through body language, thus it is proposed that interacting with animals may act as a facilitator for human interaction (Dimolareva, Dunn, 2021). In a review of studies conducted with animal-assisted interventions (Hoagwood et al., 2017; Cetin, Cuhadar, 2021; O'Haire, 2013; Dimolareva, Dunn, 2021) the psychological, emotional and social benefits of children's interaction with animals were shown, and positive outcomes in symptom reduction were reported. Children that participated in AAI showed gains in social skills and social communication, while simultaneously showing a reduction in restrictive and repetitive behaviour, as well as a reduction in aggressive and inappropriate behaviours (London et al., 2020). It also has a positive impact on their physical health, and improvements in motor action such as posture were demonstrated. Children with ASD may benefit from AAI in their education and daily life (Esposito et al., 2011; Jenkins, Reed, 2013; O'Haire, 2013). There is a large emphasis on the benefits of early intervention for children with ASD. As a result, many people with ASD experience reduced levels of therapy beyond the age of seven years. However, findings indicating that parents also consider interventions to be beneficial for older participants are starting to appear. AAT distinguishes itself by being applicable to

clients irrespective of age, which is an important consideration given the chronic nature of ASD in older age groups (London et al., 2020).

Although findings are generally consistent and point to the benefit of AAIs for children with ASD, some studies have only found insignificant trends towards improvement in children's behaviour, language ability and communication, and rely on reporting anecdotal parents' perception of benefits of AAI (London et al., 2020). Hoagwood et al., 2021 after reviewing experimental AAT studies for children or adolescents with or at risk from mental health conditions published between 2000 and 2015, and comparing studies by animal type, intervention, and outcomes, experimental evidence regarding animal-assisted therapies (AAT) found generally promising outcomes for positive effects associated with equine therapies for autism and AAT for childhood trauma (Hoagwood et al., 2021). Findings from meta-analyses of the research are often contradictory. Meta-analyses of AAI indicate small effect sizes related to improvements in social interaction, communication and reduction of ASD symptoms (Dimolareva, Dunn, 2021).

Despite the growing interest in and use of AAT involving trained dogs, to our knowledge no studies investigating parents' perspectives on this type of therapy have been conducted. Parents are the constant caregivers for their children, and are in a unique position to provide expert opinion on their child's participation and experience of interventions. They are well placed to observe and report on the effects of intervention both during the therapy and at home, and as such, their perspective is highly valuable. One large study exploring interventions for ASD found that parents had tried an average of seven to nine therapies for their children (Goin-Kochel et al., 2006). As such, parents are well suited to reflect on the benefits they perceive from AAT involving trained dogs compared to other interventions, due to their high exposure to other therapies.

Parents' experiences are not yet known or understood, thus some studies where the goal is to gain a first-hand insight into parent-reported perceptions, feelings and observations of AAT sessions and the therapeutic outcomes for their children are carried out. In one of the first of this kind of study, which explored the perspectives of parents whose children with ASD participated in individual occupational therapy sessions involving a trained dog, 17 parents participated (London et al., 2020). The aims of the study were (1) to explore the therapeutic potential of AAT involving trained dogs from the perspective of the parents of children with ASD, and (2) to gain a better understanding of which symptoms parents felt that AAT targeted (London et al., 2020). The findings suggest that the characteristics of dogs, developed from centuries of co-habitation and interdependence with humans, make the dog compatible with therapy goals. The 'social skills' of dogs are compatible with therapeutic outcomes especially in cooperative-communication

contexts with humans (Hare, 2007, 61). This study indicates that the presence of the dog in occupational therapy is valuable for addressing communication, behavioural regulation, and community participation goals. The participants' reflections on dogs as non-judgmental, non-verbal communicators support the notion that a dog's interaction and responsiveness to humans has a therapeutic potential. This study highlights the importance of enjoyment and therapeutic play as a means of supporting the intrinsic motivation of the child. The parents reported that for their children the therapy was both the motivation and the reward, and that children were able to engage in an AAT programme. This engagement can result in goal attainment in non-preferred activities that are often difficult for children to make gains in (London et al., 2020). The study found that AAT involving dogs improved community participation, due to the dog's ability to provide safety, kept the child focused and behaviourally regulated, and increased the acceptance of the child in the community.

Although there is a growing body of evidence showing the potential of AAT with various populations, there is still a limited amount of such studies in Lithuania. In addition, it is difficult to evaluate the efficacy of the intervention due to the lack of standardised evaluation methods, and the novelty of this area in Lithuania. This article continues the construction of the scientific discourse of animal-assisted therapy in Lithuania.

The purpose of the study was to evaluate the efficiency of animal-assisted therapy for children with autism spectrum disorders. The study aimed to evaluate the efficiency of animal-assisted therapy not only from the therapist's viewpoint but also from the parents' perspective. Specific objectives included: 1) to evaluate parents' perceptions of their children's performance and satisfaction level in the areas selected by parents of self-care, productivity and leisure before and after animal-assisted therapy sessions; 2) to measure the effectiveness of animal-assisted therapy sessions in language/communication, sociability, sensory/cognitive awareness and health/behaviour areas perceived by parents; 3) to evaluate and compare parents' perceived behavioural-emotional difficulties before and after animal-assisted therapy sessions; 4) to monitor and compare behavioural changes in children during and after animal-assisted therapy sessions.

1. Methods

Participants, methods and organisation of the research

Participants: nine children who all have a diagnosis of autism spectrum disorder (F83–F84 [pervasive and specific developmental disorders]). Two age groups

were formed according to age. The first group consisted of seven pre-school children (five boys, two girls) with a mean age of 3.6. The participants in the first group are indicated as B1(Boy1) – G7(Girl7). The second group consisted of two school-age children with a mean age of 7.6. Both of them were boys. They are indicated as B8 and B9 in presenting the results.

To capture parents' perception of their children's performance in everyday living, the evidence-based outcome measure Canadian Occupational Performance Measure (The COPM) (Mary Law, Sue Baptiste, Anne Carswell, Mary Ann McColl, Helene Polatajko, Nancy Polloc, 1991) was used. The COPM measures performance and satisfaction in self-care, productivity and leisure from the client's perspective. Using a semi-structured interview, the therapist initiates the COPM process by engaging the client in identifying daily occupations of importance that they want to do, need to do, or are expected to do but are unable to accomplish in the areas of self-care, productivity and leisure. Once the client has identified the occupational performance problems experienced in everyday living, he/she is asked to rate the importance of each of the occupations to his/her life using a ten-point rating scale. In the third step of the COPM process, the client chooses up to five of the most important problems identified in step two to be addressed in the intervention. The therapist enters the chosen problems and their importance ratings in the scoring section. This process serves as the basis for identifying intervention goals. In step four, the client is asked to use a ten-point scale to rate their own level of performance and satisfaction in each of the five identified problems. The therapist calculates an average COPM performance score and a satisfaction score. These typically range between 1 and 10, where 1 indicates poor performance and low satisfaction, while 10 indicates very good performance and high satisfaction. The fifth and final step of the COPM process takes places at the completion of intervention, or at a pre-determined time after the intervention was initiated. The therapist again asks the client to self-rate performance and satisfaction for the problems addressed. The therapist then uses these scores to calculate the performance and satisfaction change scores. In this study, the parents were determined as the clients, since they were the ones who were seeking to make a change, and indicated a willingness to afford more enriching developmental opportunities for their baby. Permission to use this measure was received directly from the authors.

To measure the treatment effectiveness for individuals with ASD, the Autism Treatment Evaluation Checklist (ATEC) (Rimland, B., Edelson, S. M.) was used. The purpose of the ATEC is to measure change in an individual due to various interventions. The ATEC is designed to be completed by parents, teachers or carers. It consists of four subtests: I. Speech/Language/Communication (14 items); II. Sociability (20 items); III. Sensory/ Cognitive Awareness (18 items); and IV. Health/

Physical/Behaviour (25 items). The ATEC is not a diagnostic checklist. It basically provides several subscale scores, as well as a total score to be used for comparison. Basically, the lower the score, the fewer the problems. The ATEC may be used for non-commercial purposes.

To get parents' perception of children's behavioural-emotional difficulties, two forms of Child Behaviour Checklist (CBCL/1½–5 or CBCL 6–18) (Achenbach, Rescorla, 2000) were used. ASEBA questionnaires make it possible to quickly and effectively assess various aspects of children's and adolescents' adaptive behaviour, and behavioural and emotional difficulties, and create behavioural profiles of the subjects. These estimates allow us to compare the information provided by various assessors with the results of a representative sample of individuals. For the pre-school version of the CBCL (CBCL/1½-5) was used. Parents or others who interact with the child in regular contexts rate the child's behaviour. Respondents rate the child's behaviour on a three-point scale (0 – not true, 1 – somewhat or sometimes true, and 2 – very true or often true), and are instructed to rate the behaviour as it occurs now or within the previous two months. This delineation differs from the instructions on other age versions, which is six months, because rapid development and behavioural changes in the pre-school age range are common. The pre-school checklist contains 100 problem behaviour questions. All the questions are divided into seven syndrome scales: emotionally reactive, anxious/depressed, somatic complaints, withdrawn, aggressive behavior, attention problems and sleep problems. The sum of the first four syndromes constitutes the score of internalising or emotional problems. The sum of aggressive behaviour and attention problems constitute the score of externalising or behavioural problems. The sum of all syndrome scales constitutes the score of total problems. A higher score shows more expressed emotional or behavioural difficulties (Jusienė, 2017).

Parents whose children are older than six years completed Child Behaviour Checklist 6–18 (CBCL 6/18). The questionnaire form consists of 113 statements that allow the assessment of children s behavioural and emotional difficulties at the present time or during the last six months. All statements are divided into internal difficulties (anxiety/depression, withdrawal/depression, somatic complaints); scales of external difficulties (aggressive behaviour, rule breaking), and thinking, social and attention difficulties. Respondents rate the child's behaviour on a 3-point scale (0 – not true, 1 – somewhat or sometimes true, and 2 – very true or often true). The sum of all syndrome scales constitutes the score of total problems. The higher the score, the greater the difficulties in the corresponding scale (Žukauskienė et al., 2012).

To track a client's social behaviour change across treatment sessions, the Animal-assisted Therapy-Psychosocial Session Form (AAT-PSF) was used. This form

was developed by Chandler (2005). AAT-PSF is used to effectively measure changes occurring because of AAT, and to determine human behaviours of two types: positive social behaviours and negative social behaviours. The test is designed to be completed on a client by a therapist or a therapy team at the conclusion of each therapy session. The form of psychosocial assessment of animal therapy sessions consists of 42 statements of behavioural characteristics describing the behaviour of the participants: 25 statements reveal characteristics of positive behaviour; and 17 negative. The amount of behaviour present in a session is rated on a Likert-type scale: 0 (none), 1 (very low), 2 (low), 3 (medium), 4 (high), and 5 (very high). When the statement describing the behaviour is not applicable, or it is not possible to observe and record it, an 'X' is marked on the form next to the statement, and this expression, calculating the overall estimate, has no significance. AAT-PSF provides three scores: positive social behaviour score, negative social behaviour score, and a total (overall) behaviour score. A total score is calculated from the positive behaviour cumulative score subtracting the negative behaviour cumulative score. An increasing positive behaviour score across sessions indicates positive behavioural changes; an increase in the negative behaviour score indicates negative behaviour changes; an increasing total behaviour score indicates an overall positive improvement in behaviour. In each form, the therapist can record his observations and comments about the child's behaviour during the session: the participant's progress, new problems that can emerge, and goals pursued during the session. The questionnaire was translated into Lithuanian by the Psychology Department of Klaipėda University. Permission to use this form in the research was obtained from C. K. Chandler.

2. Data collection and sessions

An animal-assisted therapy session took place in Klaipeda pedagogical psychological service, from May to March, 2017/2018. The AAT programme consisted of nine to 12 sessions, according to the needs of the child. The duration of the sessions was 30 minutes. Two certified dogs participated in the sessions. The methodology of animal-assisted therapy was based on principles of psychotherapy, ergotherapy and sensory integration.

Before the first sessions with the child, the therapist met the parents and gathered the children's anamnesis. The parents and the therapist identified the goals for therapy with COPM. The parents also completed ATEC where they could indicate the symptoms of their children at the beginning of the therapy. The parents of younger children completed a Child Behaviour Checklist, CBCL/1½-5, where they indicate their answers about their perception of their children's behavioural

and emotional difficulties. The parents of older children completed a form that is designed to evaluate the behavioural and emotional difficulties of six to 18-year-old children (CBCL6/18).

After all the sessions, the parents together with the therapist evaluated the achievement of goals with COPM, and completed ATEC where they could indicate the symptoms of the child after sessions and the Child Behaviour Checklist CBCL/1½-5 or CBCL6/18.

The Animal-assisted Therapy-Psychosocial Session Form (AAT-PSF) was completed after every AAT session by the therapist, where she registered her observations, comments about the behaviour of the child, his or her progress, newly emerged problems, and parents' observations about their children.

3. Results

To evaluate parents' perceptions of their children performance and satisfaction level, COPM measure was used. The parents rated the most important problems they identified to be addressed in therapy using a 10-point rating scale before the therapy, at the first meeting with the therapist. Next, parents were asked to use a 10-point scale to rate the performance and satisfaction level for each identified problem area. At the completion of the therapy, the parents again rated the performance and their satisfaction level for the problems addressed. Then performance and satisfaction change scores were calculated. In Table 1 we can see the importance of the identified problems as therapy targets, the level of performance and the level of satisfaction before and after therapy. Also, we can see the performance and satisfaction change score.

We can see in Table 2 the average scores of performance and satisfaction levels of all participants before and after animal-assisted therapy sessions. Obviously, there is an essential difference between the average score before and after therapy sessions both in performance and satisfaction level. This means that parents noticed differences in targeted problem areas.

Table 1. Performance and satisfaction level in problem areas identified by parents before and after therapy

Participants	COPM problem areas identified by parents as targets of therapy	Importance of the problem	Performance score in problem area (before)	Performance score in problem area (after)	Performance change score	Satisfaction score in problem area (before)	Satisfaction score in problem area (after)	Satisfaction change score
B1	1. Wait	8	2	8	6	1	8	7
	2. Shift to another activity	7	2	6	4	1	6	5
	3. Respond to prohibitions	7	3	7	4	2	7	5
	4. Do not run outside, stay close	9	4	10	6	2	9	7
G2	1. Comprehend instructions	10	3	6	3	1	4	3
	2. Use the verbs	10	1	5	4	1	7	6
	3. Name colours in the Lithuanian language	9	3	9	6	3	9	6
B3	1. Manage anger	10	1	5	4	1	5	4
	2. Use the toilet	9	2	6	4	2	1	-1
	3. Eat at the table	8	1	8	7	1	4	3

Participants	COPM problem areas identified by parents as targets of therapy	Importance of the problem	Performance score in problem area (before)	Performance score in problem area (after)	Performance change score	Satisfaction score in problem area (before)	Satisfaction score in problem area (after)	Satisfaction change score
B4	1. Execute verbal instructions	10	2	2	0	2	1	1
	2. Reduce stereotyped movements	9	1	1	0	1	2	1
	3. Dress independently	9	3	5	2	3	5	2
	4. Eat at the table	8	4	4	0	4	3	-1
B5	1. Hold a pen or a pencil	10	1	5	4	1	3	2
	2. Communicate with children in the group	10	2	7	5	2	7	5
B6	1. Execute verbal instructions	10	4	5	1	3	4	1
	2. Wait	9	2	4	2	2	4	2
	3. Respond to own name	10	3	8	5	2	7	5
G7	1. Be able to express needs	10	2	5	3	1	5	4
	2. Comprehend verbal instructions	10	2	7	5	2	7	5
	3. Respond to own name	10	2	4	2	2	4	2

Participants	COPM problem areas identified by parents as targets of therapy	Importance of the problem	Performance score in problem area (before)	Performance score in problem area (after)	Performance change score	Satisfaction score in problem area (before)	Satisfaction score in problem area (after)	Satisfaction change score
B8	1. Articulate clearly	10	4	6	2	4	8	4
	2. Wait	10	4	7	3	4	7	3
	3. Manage anger	10	3	6	3	3	6	3
	4. Do not swear, speak politely	10	3	8	5	3	8	5
B9	1. Stay at the table while learning	10	2	6	4	1	7	6
	2. Wait	9	4	7	3	3	8	5
	3. Reduce self-stimulation	8	3	8	5	2	9	7

B – boy, G – girl

Table 2. Average scores of performance and satisfaction levels before and after animal-assisted therapy sessions

	M ± SD before therapy	M ± SD after therapy
Average scores of performance level	2,42 ± 0,73	6,02 ± 1,35
Average scores of satisfaction level	1,91 ± 0,76	5,62 ± 1,85

M – mean, SD – standard deviation

The performance and satisfaction change score for each child selected by parents' problem areas are presented in Figure 1. We can see the performance and satisfaction average scores for each of the nine children. As is seen, parents reported changes for eight children. The mother of participant B4 did not indicate big changes.

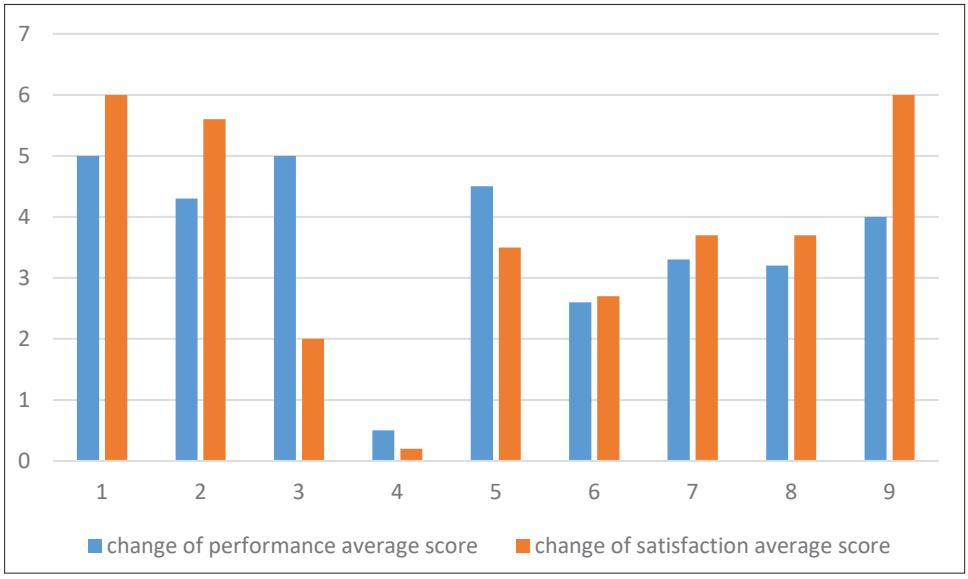

Figure 1. Changes in performance and satisfaction average scores for each child

To measure the effectiveness of animal-assisted therapy sessions perceived by parents in areas of language communication, sociability, sensory/cognitive awareness, and behaviour, the ATEC measure was used. Parents completed the ATEC measure before and after therapy. Table 3 show scores in four measured areas before and after animal-assisted therapy sessions. A lower score indicates fewer problems. We can see that in all the measured areas the scores are lower; this means that the parents indicate fewer problems in those areas. The biggest changes indicated by parents are noticeable in the sociability area.

Table 3. ATEC scores of each participant in areas measured by parents before and after therapy

Assessed areas	**Language/communication**		**Sociability**		**Sensory/cognitive awareness**		**Behaviour**	
Participants	**Before**	**After**	**Before**	**After**	**Before**	**After**	**Before**	**After**
B1	11	0	7	1	9	1	11	10
G2	12	6	9	1	5	4	5	3
B3	14	11	15	7	9	3	25	10
B4	24	23	16	7	20	12	20	16
B5	19	18	17	9	13	4	11	9
B6	20	16	17	14	15	10	15	11
G7	25	16	15	2	28	12	25	9
B8	8	2	15	4	7	1	26	14
B9	14	6	18	7	11	8	21	17

We can see changes in four measured areas of every participant in Table 4. We can see individual differences of changes in different areas and a different range of change for different participants. At an individual level, obvious changes of participant G7 in all measured areas, and quite big changes seen in participant B8. The rest of the participants' changes are noticeable in different areas. If we compare changes in different areas, we can see that sociability is the area where the changes are biggest for all participants, except for participant B6. The biggest variability is noticeable in the sensory/cognitive awareness change score, which varied in the range of a 15 score interval (where 1 is the smallest change score and 16 is the biggest change score), and the health/behaviour change score, which varied in the range of a 14 score interval (where 2 is the smallet change score, and 16 the biggest change score). A lower score indicates fewer problems.

Table 4. Change scores in measured areas of each participant

Participant	Measured area			
	Language change score	Sociability change score	Sensory/cognitive awareness change score	Health/physical/behaviour change score
B1	11	6	8	1
G2	6	8	1	2
B3	3	8	6	15
B4	1	9	8	4
B5	1	8	9	2
B6	4	3	5	4
G7	9	13	16	16
B8	6	11	6	12
B9	8	11	3	4

To assess the behavioural and emotional difficulties before and after animal-assisted therapy sessions, we asked the parents of both groups to complete the Child Behaviour Checklist CBCL1½-5 (for the parents of the first group) or CBCL6/18 for the parents of the second group), where they rated their child's behaviour. The results obtained allowed to compare parents' perception of their children's behavioural and emotional difficulties before and after therapy (Table 5). From the results presented, we can see that children's aggressive behaviour and external difficulties were perceived by parents as statistically significantly lower. Analysing the results, the scores of the emotionally reactive syndrome scale, withdrawn scale, somatic complaints scale, and internalising problems scale are slightly higher after therapy; in other scales the scores are slightly smaller; however in all these scales, except the aggressive behaviour and externalizing problem scale, the difference is not statistically significant.

Table 5. Children's behavioural and emotional difficulties evaluated by parents before and after therapy

Syndrome scales	Average scores (M ± SD) before therapy	Average scores (M ± SD) after therapy
Emotionally reactive (N7)	4.57 ± 3.55	4.71 ± 4.15
Anxious/depressed (N9)	6.22 ± 5.8	6 ± 4.09
Somatic complaints (N9)	1 ± 1.12	1.89 ± 1.96
Withdrawn (N9)	5.33 ± 2	5.56 ±2.35
Internalising problems (N9)	16.11 ± 7.91	16.44 ± 7.81
Sleeping problems (N7)	4 ± 2.45	3.57 ± 3.31
Attention problems (N9)	6.56 ± 9.09	6.33 ± 6.02
Aggressive behaviour (N9)	**16.89** ± **9.14***	**14.67** ± **6.89***
Externalising problems (N9)	**21** ± **22.37***	**18.67** ± **8.72***
Total problems (N9)	46.78 ± 28.06	45.11 ± 22.88

M – mean, SD – standard deviation, N – number of children evaluated by parents
*p <0,05

To monitor and compare the behavioural changes of children during each session, the Animal-assisted Therapy-Psychosocial Session Form (AAT-PSF) was completed after every animal-assisted therapy session by the therapist, where she registered the frequency of behaviour, her observations, comments about the behaviour of the child, and his or her progress. This form allows us to provide a total score that is calculated from the positive behaviour cumulative score, subtracting the negative behaviour cumulative score. An increasing positive behaviour score across sessions indicates positive behavioural changes; an increase in the negative behaviour score indicates negative behaviour changes; an increasing total behaviour score indicates an overall positive improvement in behaviour. In this way, the therapist can track the progress of behaviour in each session. The total behaviour scores of children in the first and second groups during sessions are presented in Table 6 and Table 7. First, we can see that the numbers of sessions are different. The lowest number of sessions was nine (for participant B5). The highest number of sessions was 12 (for participant B7). Some greater changes could be noticeable in behavioural changes in the participants from the second group, but the number of participants is too small to make inferences.

Table 6. Total behaviour scores in each session of the first group, as evaluated by the therapist with the 'Animal-Assisted Therapy-Psychosocial Session Form'

Participant	Total behaviour scores in each session										
	1	2	3	4	5	6	7	8	9	10	11
B1	17	26	42	37	42	40	44	41	39	42	
G2	24	36	36	35	43	39	37	42	41	41	
B3	18	22	31	33	38	28	31	28	27	25	32
B4	24	29	31	31	23	24	29	23	14	25	21
B5	27	30	17	25	18	28	28	31	21		
B6	32	37	32	38	37	35	39	38	40	39	
G7	12	31	28	29	32	30	40	30	44	21	34

Table 7. Total behaviour scores in each session of the second group, as evaluated by the therapist with the 'Animal-Assisted Therapy-Psychosocial Session Form'

Participant	Total behaviour scores in each session											
	1	2	3	4	5	6	7	8	9	10	11	12
B8	39	40	46	50	42	44	46	44	45	46	47	47
B9	22	21	27	26	32	38	44	44	42			

4. Discussion

In this study, the positive outcomes perceived by parents are confirmed. Parents evaluated the performance and satisfaction level for the problems addressed as higher after therapy. With these results, the study confirms studies by Hoagwood et al. (2017), Cetin and Cuhadar (2021), O'Haire (2013), and Dimolareva and Dunn (2021), where positive outcomes in symptom reduction were shown in the psychological, emotional and social benefits of children's interaction with animals. The results of this study contribute to the research where children who participated in AAT showed gains in social skills and social communication, while simultaneously showing a reduction in restrictive and repetitive behaviour, as well as a reduction in aggressive and inappropriate behaviour (London et al., 2020). The parents in this study reported the highest performance and satisfaction change scores in the social functioning of children, rating children's behaviour such as the capability to wait, to respond to their own name, to not run outside, stay close, not to swear, to speak politely, eat at the table, and communicate with children in the group with higher scores in areas of performance and satisfaction. The problems identified in children's communication were also rated by parents with higher ratings in the performance and satisfaction areas. As reported by the parents, children were

more likely to use verbs, name colours in the Lithuanian language, comprehend instructions, and articulate clearly, after animal-assisted therapy sessions. Fewer problems in the areas of sociability, language/communication, sensory/cognitive awareness, health/physical/behaviour are reported by parents as well in this study.

Animal-assisted therapy sessions result in an improvement in aggressive behaviour and in externalising problems, as parents' scores for this behaviour are significantly lower after canine therapy sessions. Typically, parents and other significant adults have difficulty recognising subtle problem behaviours associated with changes in anxiety, depression and other internalised behaviour, so these problems often go unidentified and untreated in children. So it is hard to find the effect of therapy on internalising problems. And even more, on the contrary, sometimes therapy liberates inner problems in such a way that parents can finally notice them.

AAT–PSF as an instrument offers practitioners a multifaceted tool for better monitoring client treatment sessions, and is suitable mostly for the qualitative description of changes in therapy sessions or significant shifts in client behaviour. It can help examine therapeutic interventions that may have an influence on the client's change. These form results were not suitable for indicating a stable qualitative growth or decline, as the results are sensitive to the inner states of clients. This is especially true the younger the child. We can make some assumptions that as the child grows older, his/her inner states influencing less his/her performance on therapy sessions, and we could see the effects of AAT with this form as well. Finally, the total behaviour score in each session showed that animal-assisted therapy sessions were even more beneficial to older than to younger participants. This study confirms AAT as being applicable for clients irrespective of age (London et al., 2020).

One of the future directions could be to conduct more qualitative, phenomenological studies of parents' experiences to gain a first-hand insight into parent-reported perceptions, feelings and observations of AAT sessions and the therapeutic outcomes for their children.

Conclusions

The results from two measurement methods, COPM and ATEC, provide support for the efficacy of animal-assisted therapy. The COPM average scores of performance and satisfaction are higher in both groups of participants after animal-assisted therapy sessions, as indicated by the parents.

The parents of all participants indicated lower scores in all four subtests of ATEC: speech/language, sociability, sensory/cognitive awareness, and health/physical behaviour. Lower scores indicate fewer problems in the mentioned areas.

Parents evaluate children's aggressive behaviour and externalising problems as significantly lower after animal-assisted therapy sessions. The scores for the emotionally reactive syndrome scale, withdrawn scale, somatic complaints scale, and internalising problems scale are slightly higher after therapy, but the difference is not statistically significant. Parents tend to notice changes in behavioural problems more than emotional.

The behavioural changes monitored by the therapist varied in each session. The monitoring of behavioural changes in each session cannot indicate stable qualitative growth or decline, as the results are sensitive to the inner states of the children. The behaviour scores in each session showed that AAT sessions were beneficial to older as well as to younger participants.

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