CANINE-ASSISTED OCCUPATIONAL THERAPY: CASE STUDY WITH A CHILD ON THE AUTISM SPECTRUM

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ABSTRACT: This study presents the objectives, activities and strategies of a canine-assisted therapy for a child on autism spectrum. Canadian Occupational Performance Measurement and a Checklist were used to measure components of the child's performance, engagement and behavior in relation to the dog and were used to define the therapeutic goals. The qualitative and quantitative approach was articulated to analyze the data of this case study. There was an increase in the child's intrinsic motivation, in the frequency of showing attention, interest, persistence, communication, proximity and time close to the dog. Activities structured in stages and the incorporation of the dog in the last stage of the activity favored the child to perform them successfully.
KEYWORDS: Animal-Assisted Therapy; Canine-Assisted Therapy; Autism Spectrum Disorder; Occupational Therapy.

TERAPIA OCUPACIONAL ASSISTIDA POR CÃES: ESTUDO DE CASO COM CRIANÇA NO TRANSTORNO DO ESPECTRO AUTISTA

RESUMO: Este estudo apresenta os objetivos, atividades e estratégias de uma terapia assistida por cães para uma criança com autismo. A Medida Canadense de Desempenho Ocupacional e um Checklist foram usados para medir os componentes do desempenho, engajamento e comportamento da criança em relação ao cão e foram usadas para definir os objetivos terapêuticos. A abordagem qualitativa e quantitativa foi articulada para analisar os dados deste estudo de caso. Houve aumento na motivação intrínseca da criança, na frequência de demonstração de atenção, interesse, persistência, comunicação, proximidade e tempo próximo ao cão. As atividades estruturadas em etapas e a incorporação do cão na última etapa das atividades favoreceram a criança a realizá-las com sucesso.
PALAVRAS-CHAVE: Terapia Assistida por Animais; Terapia Assistida por Cães; Transtorno do Espectro Autista; Terapia Ocupacional.

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TERAPIA OCUPACIONAL ASISTIDA CANINA: ESTUDIO DE CASO CON UN NIÑO EN EL ESPECTRO DEL AUTISMO

RESUMEN: Este estudio presenta los objetivos, actividades y estrategias de una terapia asistida por caninos para un niño sobre el espectro autista. Se utilizaron la Medición del Desempeño Ocupacional Canadiense y una Lista de Verificación para medir componentes del desempeño, compromiso y comportamiento del niño en relación con el perro y se definieron los objetivos terapéuticos. Se articuló el enfoque cualitativo y cuantitativo para analizar los datos de este caso de estudio. Se observó un aumento en la motivación intrínseca del niño, en la frecuencia de mostrar atención, interés, persistencia, comunicación, proximidad y tiempo cercano al perro. Las actividades estructuradas en etapas y la incorporación del perro en la última etapa de la actividad favorecieron que el niño las realizara con éxito.
PALABRAS CLAVE: Terapia Asistida por Animales; Terapia Asistida por Caninos; Trastorno del Espectro Autista; Terapia Ocupacional.

1. INTRODUCTION

Occupational therapists have incorporated dog into their professional interventions, practicing Animal Assisted Therapy (AAT) aimed at different populations (Sams et al., 2006; Roehm, 2010; Beck et al., 2012; Issacson, 2013; Andreasen et al., 2017). Fine (2019) define AAT consists of incorporating an animal as an integral part of the therapeutic process, and therapeutic interventions are organized and supervised by a health an/or human sciences professional (such as doctor, occupational therapist, physiotherapist, speech therapist, nurse, psychologist, social worker).

Andreasen et al. (2017) report that canine-assisted occupational therapy begins with an evaluation of the client to identify the demands and define the goals to be achieved with AAT. Subsequently, the occupational therapist elaborates on an intervention plan in which the dog is intentionally included and participates in its entirety or in parts of the session through activities, tasks, and actions.

Hill et al. (2020a) emphasize that the incorporation of a dog in occupational therapy sessions should be evidence-based and centered on the occupation. The occupational therapist should be able to divide her/his attention between the child and the dog while maintaining the focus on the therapeutic objectives and the effectiveness of the intervention. The dog may have active or passive participation in therapeutic tasks. The occupational therapist should have knowledge about how the dog can assist in the therapy and facilitate the achievement of therapeutic goals. For this reason, the occupational therapist must have theoretical and practical training in AAT and the dog needs to have

predictable and reliable temperament and behavior, having received obedience training and been socialized in the clinical environment. The dog also needs to undergo periodic veterinary evaluation, as well as annual vaccination and preventive treatment (Hill et al., 2020a).

The international literature relating canine-assisted occupational therapy to children with autism spectrum disorder (ASD) is growing. Such literature tests protocols and indicates results, limitations and implications for future studies (Hill et al., 2020a, 2020b, Hill, Ziviani, Driscoll, 2020a, Hill, Ziviani, Driscoll, 2020b; Hill et al., 2019a, 2019b; Sams et al., 2006).

Despite the growing production of knowledge, questions remain in the field such as: how can the dog be incorporated and what activities can be carried out to achieve the specific objectives?.

In the Brazilian context, according to a review of the Brazilian occupational therapy literature, no studies on canine-assisted occupational therapy were found (Figueiredo, Allegretti, Magalhães, 2021). This fact indicates a gap in national knowledge production on the subject.

Studies report that children on ASD, during early development, have difficulty acquiring social and emotional skills, having restricted interests, language and communication deficits, and motor disorders such as stereotyped movements, gait deficits, low muscle tone, fine motor coordination and balance impaired (Cadore, 2022). In addition, children on ASD have changes in functional performance that interfere with their ability to perform their occupations independently and autonomously, impacting their own health, quality of life and well-being, as well as that of their families (Beheshti et al., 2022, Zaidman-Zait & Curle, 2018, Ludlow et al. 2012).

The studies by Hill et al. (2019b) and Hill et al. (2020b) found positive effects of a canine-assisted occupational therapeutic intervention protocol for children with ASD compared to interventions considered conventional for this population. The authors indicated that further studies are needed since there are still no universal standards or formalized guidelines for this type of practice by occupational therapists for children with ASD.

Considering that the international literature points to the need for further investigation on how the dog can be incorporated to assist in therapeutic interventions and a lack of protocols for implementation with children with ASD, added to the incipient

national production by occupational therapists on the subject, this research aims to carry out a case study on canine-assisted occupational therapy for a child with ASD.

This case study sought answers to the following questions: Can canine-assisted occupational therapy promote the development or improvement of performance and engagement components and social and emotional behaviors of a child on the ASD? What activities, directly related to the therapeutic goals, could be performed with the dog? What would be the strategies for incorporating the dog into a canine-assisted occupational therapy for a child on the ASD? Thus, based on the case study, this paper presents the goals, activities, and strategies implemented to achieve a canine-assisted occupational therapy with a child on the ASD in Brazil.

2. METHODS

2.1 Design

This is an instrumental case study. Case study constitutes a methodological perspective that is carried out from a particular case, whether individual or collective, commonly applied when the phenomenon of investigation is complex, highly contextualized, and involving several variables. A case study can generate evidence, as analyzable data is collected to reveal the particularity and complexity of a case (Rosenberg & Yates, 2007; Yin, 2018).

2.2 Participants

The present study was approved by the Ethics Committee on Research with Human Beings (code number 3.453,713) and by the Ethics Committee on the Use of Animals (code number CEUA nº 3112150419 (ID 001278) both of the Federal University of São Carlos.

The participant was a 6-year-old male child, whom we will name Luke. Luke was born with bilateral congenital deafness of the sensorineural type and of deep degree, he underwent bilateral cochlear implant surgery at the age of 2. Luke was diagnosed on the ASD at the age of 5, but the signs and symptoms have been identified since the age of 2. Luke has prelingual deafness, that is, a deafness that was diagnosed before the acquisition of the mother's oral language. This adverse condition impaired language acquisition, speech learning, and consequent reading and writing. Autism can be verbal or nonverbal depending on the peculiarities surrounding the spectrum; since Luke does not speak, he

presents a nonverbal autism that, in this particular case, maybe a result of autism itself or of the prelingual deafness. At the time of the sessions, Luke was enrolled in the first year of elementary school in a private regular school, performing at the pre-syllabic level of literacy. In order to communicate, Luke used primitive sounds associated with both indicative and representative gestures.

The dog belonged to the occupational therapist responsible for the study and was named Viena, a mix dachshund breed, short hair, female, 2 years old. Since the age of 3 months, Viena has a docile temperament and undergone socialization activities with other dogs, people, and places, associated with basic obedience training. Before the session with Luke, Viena had contact with each activity to be carried out, in order to be familiar with the activity and to train the expected behaviors. In addition, Viena had physical and emotional health certified by a veterinarian, complete annual vaccination, and was under the preventive treatment of fleas, ticks, and parasites.

The occupational therapist has a master's degree in child health and a doctorate in special education, with 17 years of professional experience with children with disabilities, disordered, and/or developmental delay. The therapist held an internship at a service dog training agency and performed and was approved a therapy animal handler course. The therapist has been a faculty with an undergraduate and a postgraduate program in occupational therapy in Brazil, for 5 years. The present case study was carried out in the scope of teaching, research, and clinical activities with the children's population of a medium-sized city in the countryside of São Paulo, Brazil.

A 4th-year student of an occupational therapy undergraduate course was an intern in the project, assisting in the planning and registration of therapy sessions. The intern and therapist met once a week to plan the activities and practice with the dog.

The sessions took place at Luke's residence on a flat, rectangular, cement, fenced, and outdoor sports court.

Luke and his family arrived at the project through spontaneous demand, after the project was advertised in channels of communication for the university community. Considering the expression of interest of the family, a meeting was held with the parents to explain what and how would constitute the canine-assisted occupational therapy (assessment, number and duration of sessions, one of the parents present at the sessions). The parents signed the free and informed consent form, which described that 9 sessions

would be held in the family residence lasting 1 hour each, being 8 sessions with the incorporation of the dog.

2.3 Measures

To define the therapeutic goals and verify whether they were achieved, two instruments were applied before and after the implementation of the intervention plan. Since the child can´t use oral language , the collection of information regarding daily activities that Luke desires, needs or should perform, were obtained from the mother, who responded to the Brazilian version of the Canadian Occupational Performance Measure (COPM) (Law et al., 2009).

A checklist elaborated by the first author named "Assessment of Performance and Engagement Components and Aspects of Social and Emotional Behavior" (Figueiredo, Pfeifer, 2022) was applied in Session 2 to evaluate Luke pre-intervention performance and repeated in Sessions 3 to 9 for Luke's follow-up during the intervention. The therapist and the intern filled out the checklist separately and then compared the records. The checklist was composed of components of performance and engagement, besides social and emotional behaviors that were observed in Luke's engagement during the development of the activities, as well as in the relationship and interaction with the dog.

The checklist was developed from the standpoint that performance is a result yielded by a set of skills, demonstrable by the presence or absence of performance components (Polatajko et al., 2013). The checklist focus was the frequency of the components of sensory-motor performance (balance, fine motor coordination, global motor coordination, visual, auditory, and tactile response), and cognitive performance (attention, comprehension, recognition, memory, and problem-solving) exhibited by the child (Ranka & Chapparo, 1997). Engagement was considered a subjective experience, which contains meaning(s), interest(s), motivation(s), sense of self-efficacy, and that is associated with the performance obtained (Polatajko et al., 2013). The checklist recorded the frequency in which the child showed interest, motivation, perseverance, sense of control, and choice (Kennedy & Davis, 2017) regarding the activities and to complete the activities. The social and emotional behavior of the child in relation and interaction with the therapy dog was similar to those defined and reported in the studies by Funahashi et al. (2014) and Muñoz (2013), that focused respectively on the activity and therapy assisted by dogs for children on the ASD. Thus, the checklist recorded the behaviors of

"look at the dog", "smile at the dog", "voluntarily touch the dog", "hold the dog", "communicating with the dog", "frequency of approximation", "closing time (dog at arm's length)", “running away from the dog", "stop participating in the activity and stay out of the child-activity-dog relationship", "time away from the dog and the activity", "grinding of teeth", "scream" and "cry".

For all the items, a Lickert scale was applied with the options "Always", "Multiple times", "Ever" and "Never" to record the frequency at which they were demonstrated by the child.

2.4 Data analysis

A qualitative and quantitative approach was articulated in the case study (Depoy & Gitlin, 2011). The qualitative aspect is justified because the study was intended to investigate the phenomena in their naturalistic context and not in a laboratory environment, which allowed to gather information from the child's real-life experiences with the therapist dog in sessions. The quantitative aspect was important to describe the frequency of the performance and engagement components, besides social and emotional behaviors expressed by the child. It also yielded a comparison of the responses before and after the intervention.

3. RESULTS

The findings will be presented in sub-items related to the goals, activities, and strategies implemented for canine-assisted occupational therapy with a child on ASD. To present the goals of the sessions, the results of the initial assessment of the child are informed, since these results generated the therapeutic goals. The activities are presented along with the strategies as they were implemented to enable the activities to be carried out.

3.1 Assessment Results and Therapeutic Goals

Through the COPM (Law et al., 2009), it was identified that Lucas had difficulties to carry out self-care and productive activities, with regard to playing and studying. Thus, the following functional problems in occupational performance were listed: a) accepting and following the rules stipulated for the occurrence of activities, b) accepting changes, alternating activities and agreeing to carry out the proposed new activities, c) maintaining

motivation, interest and attention even with the change / alternation of activities and rules. For all the listed functional difficulties, a score of 2 was assigned, both for performance and satisfaction.

The checklist identified that the components of sensory-motor performance such as balance, fine motor, and global motor coordination were classified as "Several Times" demonstrated. The visual, auditory, and tactile response was classified as "Ever" demonstrated. All components of cognitive performance and engagement were classified as "Sometimes". It was observed that the lower the sense of control and choice over the activity, Luke automatically exhibited less interest, motivation, and perseverance to complete the activity.

Regarding aspects of social and emotional behavior, "voluntarily touching the dog", "holding the dog", "communicating with the dog" and "close time (dog within arm's reach)" were classified as "Never" demonstrated. The "frequency of approximation" and "cry" were classified as "Sometimes". The "smile at the dog", "grinding of teeth" and "scream" were classified as "Several Times". Lastly, "run away from the dog", "stop participating in the activity and stay out of the child-activity-dog relationship" and "time away from the dog and the activity" were classified as "Always" demonstrated.

As a result of the ASD, Luke exhibits sensory processing and selective behaviors that affect his feeding, bathing, changing clothes and wearing shoes. In addition, Lucas presented ritualistic behaviors that affect accepting and abiding by rules, sharing toys and objects at school, accepting changes in school routine and alternating school activities.

In view of the occupational performance problems listed by the mother and the observation of components of performance, engagement, and social and emotional behavior, the therapeutic goals were defined:

1.To present and socialize the child with the dog, so that the frequency of social and emotional behaviors is reduced: "run away from the dog", "stop participating in the activity and stay out of the child-activity-dog relationship", "time away from the dog and the activity", "grinding of teeth", "scream" and "cry".

2.To facilitate the child's interaction with the dog and the child-dog bond, so that the frequency of social and emotional behaviors is increased: "touching the dog voluntarily", "holding the dog", "communicating with the dog", "closing time (dog within arm's reach)" and "frequency of approximation".

3.To stimulate the sensory-motor components in order to promote tactile, auditory, and visual responses.

4.To stimulate cognitive and engagement components to promote the ability to accept rules, changes, and alternation in activities.

The objectives were presented to Luke's mother, and, upon her agreement, the activities were designed to achieve the therapeutic goals.

3.2 Activities and Strategies of the Intervention Plan

Table 1 presents all the activities and strategies carried out, indicating the goals of the sessions.

Table 1: Session, Goals, Activities and Strategies

Session/Goals	Activities	Strategies
1 Know the child and initiate communication and interaction. Know the place of sessions. Apply COPM.	Presentation of the therapist to the child. Talk to the child. Knowledge of where the sessions would take place. Completion of COPM by the therapist according to the parents' answers.	Parents previously warned the child that the therapist would go and that the therapist has a dog that helps her in the sessions. The therapist asks questions to the child and shows a photo of the dog as a way to start communication and interaction. The therapist asks the child to present the preferred location of the house. Communication is mediated by the parents to transmit the message and understand the answers.
2 Introduce the dog to the child. To observe and register in the checklist components of performance and engagement, social and emotional behaviors of the child in relation and interaction with the dog.	Pet the dog. Playing fetch. Walk with the dog.	Arrive at the place holding the dog by the leash. Stay one meter away from the child and lowered at the height of the child's eyes. Speak the dog's name, comments and questions to the child. Sit, ask to the dog lie down with his head facing the therapist and the body to the side of the child, pet the dog, and make comments and questions to the child. Keep holding the leash when the dog returns the ball to the child. Keep holding the leash and intermediate between child and dog. Nonverbal reinforcement, positive reinforcement, verbal command associated with representative gestures.
3 a 9 To present and socialize the child with the therapy dog, so that the frequency of some social and emotional behaviors is reduced. To facilitate the child's interaction with the therapy dog and the child-dog bond, so that the frequency of some social and emotional behaviors is increased.	Playing fetch with the dog standing on top of a different types of balance board. Give water and treats to the dog. Pet the dog. Walk with the dog. Rotate the hula hoop, climb on a balance platform, catch	Tell the child that the dog was hungry, thirsty and need to rest. Ask if the child wants to give water and treats. Demonstrate how to open the bottle, pour the water into the bowl and how to pick up one treat at a time. Demonstrate how to climb the board and position the feet. Accompany the dog while it picks up the ball and hands it to the child. Talk to the child "Don’t be afraid," "It’s okay," "She’s just bringing the ball back."

To stimulate the sensory-motor components in order to promote tactile, auditory and visual responses. To stimulate cognitive and engagement components to promote the ability to accept rules, changes and alternation in activities. To observe and register in the checklist components of performance and engagement, social and emotional behaviors of the child in relation and interaction with the dog.	a ball inside a box, extend the body and play fetch. Walk with one foot in front of the other on a rope attached to the floor, roll a hula hoop, climb on the balance board, pass the hula hoop around the body until it touched the balance board, catch a ball in a box next to the board and playing fetch.	Demonstration of how to put the seat belt to transport the dog in the car. Composition of activities by stage, interspersing new activities with those already carried out. Include the dog in the final step of the activity. Highlight the presence of the dog next to the balance board. Do the route and the steps of the activity together with the child. Repeat an action that the child did voluntarily in the previous session. Use of naturalistic drawings that illustrated the activities previously performed. Split the drawings in two bags and carry out the activities jointly/sequentially.

Source: Author's.

Table 2 compares the frequency with which the performance and engagement components, aspects of social and emotional behavior were demonstrated in the first and last sessions.

Table 2: Assessment of Performance, Engagement, Social and Emotional Behavior

Components/Aspects	**Items**	**Pre-Intervention Frequency**				**Post-Intervention Frequency**			
		A	**MT**	**S**	**N**	**A**	**MT**	**S**	**N**
Sensory-Motor Performance	Balance		X			X			
	Global motor coordination		X			X			
	Fine motor coordination		X			X			
	Visual response			X		X			
	Auditory response			X			X		
	Tactile response			X			X		
Cognitive Performance	Attention			X			X		
	Comprehension			X			X		
	Recognition			X			X		
	Memory			X			X		
	Problem-solving			X			X		
Engagement	Interest			X			X		
	Motivation			X			X		
	Perseverance			X			X		
	Sense of control			X			X		
	Sense of choice			X			X		
	Look at the dog	X				X			
	Smile at the dog		X			X			
	Voluntarily touch the dog				X		X		
	Hold the dog				X		X		
	Communicating with the dog				X	X			
	Frequency of approximation			X			X		
	Closing time (dog at arm's reach)			X			X		
	Running away from the dog	X							X

Social and Emotional Behaviour	Stop participating in the activity and stay out of the child-activity-dog relationship	X						X	
	Time away from dog and activity		X					X	
	Grinding teeth		X						X
	Scream		X						X
	Cry			X					X

Source: Author's.

4. DISCUSSION

The present case study described the goals, activities, and strategies adopted for canine-assisted occupational therapy for a child on ASD in Brazil. The goals defined in this case study corresponded to those already recognized in interventions with children on ASD by occupational therapists (Hill et al. 2020b). Among these goals, we highlight the stimulation and promotion of sensory processing, sensory-motor performance, social-behavioral performance, and engagement in self-care activities, school and play (Hill et al. 2020b; Ashburner et al., 2014; Bagatell & Mason, 2015; Case-Smith & Arbesman, 2008).

The study goals were related to the difficulties presented by the child and reported by his mother and were similar to those usually identified in children on the ASD, such as the presence of restricted and repetitive behaviors, reduction in social motivation, difficulties in social engagement and performing tasks (Beheshti et al., 2022, Hill, et al 2019a, 2019b, Zaidman-Zait & Curle, 2018, Llambias et al., 2016; Schatz et al., 2016, Ludlow et al. 2012)

The literature shows that the complexity of the ASD is a challenge for therapeutic interventions and for achieving the established goals. There is a constant need to manage behaviors related to the difficulty of social engagement and performing tasks, that generally compromise the participation of these children in therapy sessions (Hill et al. 2020b, Llambias et al., 2016; Schatz et al., 2016). Therefore, it is important to know activities and strategies that can promote the engagement of children on the ASD into occupational therapy sessions.

Grandin et al. (2005) e Prothmann et al. (2009) reported that children on the ASD have high motivation in interactions with animals despite reduced motivation for human interaction. According to Hill et al. (2020a) the dog being aligned with the therapeutic objectives is potentially motivating for the child's engagement in the proposed therapeutic activities. Activities based on the intrinsic motivation of children on the ASD are more

likely to be successful (Hill et al., 2019b; Dearden et al., 2016; Koegel et al., 2010; Sams et al., 2006).

The activities in this study, when incorporating the dog, favored the child's engagement in the activity, so that the therapeutic goals could be worked on. Thus, the incorporation of the dog in the activities allowed the child's doing to be guided by an intrinsic motivation, that is, by doing the activity or a stage of the activity through the desire to do them in a direct relationship. In this sense, strategies were adopted for the activities to be carried out successfully. These strategies had the purpose of favoring the creation of a relationship with the child based on trust. This was possible through the motivation and participation of the child, which allowed the realization of an occupational experience that would develop or improve components of performance and engagement, achieving the established goals. Among the strategies stands out the structuring of activities in stages and the incorporation of the dog in the last stage of the activity.

Authors report that the use of strategies that support intrinsic motivation such as providing the child a sense of choice within the intervention and a sense of control facilitates the engagement in the task and the relation with the therapist (Hill et al., 2019b; Dearden et al., 2016; Koegel et al., 2010; Sams et al., 2006). Another strategy that promotes further engagement is the proposition of whole activities, which are then fractioned and aligned by several stages, rather than the repetition of a single step. Activities with fractioned steps, which correspond to what the child is able to do interspersed with what the child has difficulty, can provide the challenge in the right measure and favor the motivation to persist. Starting the session with what is of interest to the child is also a strategy that helps in promoting engagement (Hill et al., 2019b; Koegel et al., 2010).

In this study, some activities were organized by stages, in which the child's previous knowledge and interest were interspersed with something new. Considering this strategy, on the one hand, there was a sense of control and choice in the activity, and on the other hand, it was necessary for the child to deal with change and alternation of steps, requiring attention, motivation, and persistence. The fact that the dog was incorporated in the last stage of the activity was a fundamental element for intrinsic motivation, which consequently allowed the stimulation of performance components (attention, recognition, memory) and engagement (motivation, interest, persistence). When comparing social and emotional behaviors, child performance, and engagement in the first and last session in

contact with the dog, positive changes were observed. These changes denote that the therapy dog and the strategies used were efficient for the intrinsic motivation and adherence of the child in the proposed activities.

According to King (2016) and Ziviani (2015), the therapist's ability to establish a therapeutic relationship and a sense of relationship with the clients proved to be a predictor for the success of therapy. Hill, Ziviani e Driscoll (2020a) identified in canine-assisted occupational therapy for children on the ASD that the dog can accelerate the construction of a relationship between the child and the therapist. The dog also seems to have been understood by children as being a reliable ally, non-threatening, non-judgmental, and with a relationship of unconditional loyalty to the child. With this, the dog conveys the message that he will be happy regardless of the result, which consequently reduces the child's anxiety, increases the sense of competence to perform the activities of therapy, and motivates to persist.

In this case, we noticed that the connection established between Luke and the dog seemed to act as a bridge, also connecting the child to the therapist and giving meaning to the strategies adopted. Therefore, canine-assisted occupational therapy requires occupational therapists to be skilled in their area of activity, but also in understanding the phenomenon of the human-animal bond. This phenomenon can be defined by the instinctive search of human beings for contact with animals, as they constitute a source of unconditional support, without judgment, promoting the establishment of an emotional, physical, social connection and attachment. Such understanding requires familiarity with concepts such as those adopted in attachment theory, or of the approaches in which animals act as social support, as well as in the biophilia hypothesis (Fine & Beck, 2019). Thus, it is possible to adopt canine-assisted occupational therapy in order to provide a beneficial interaction for both the human and the animal.

5. CONCLUSIONS

This case study provided answers to the three research questions.

In this case study the chosen activities and the strategies applied demonstrated a potential to stimulate the development and improvement of performance and engagement components, as well as the child’s social and emotional behaviors. This is based on the observation of changes in the frequency of such components and behaviors demonstrated

by the child. The incorporation of the dog proved to be fundamental for the intrinsic motivation and engagement of the child in the proposed activities.

In this case study, nine activities were planned and carried out with the intended incorporation of the dog during the whole activity or in some stages of the activity. All activities were conducive to achieving the therapeutic goals of introducing and bonding the child with the dog, stimulating sensory-motor, cognitive and occupational engagement components, and fostering positive social and emotional behaviors.

We presented some strategies, such as the incorporation of the dog in the last stage of an activity, which proved to be effective in facilitating the child's engagement in the therapeutic process.

Thus, the results obtained from this case study contribute to answering relevant research questions regarding how, when, and in which activities the dog can be engaged in order to achieve the established goals, and what strategies should be used so that the activities can be performed, and the goals achieved. Canine-assisted occupational therapy studies are important in view of the need for the strengthening of the theoretical basis and guidelines for this kind of practice. In this sense, it can support the training of qualified occupational therapists for the practice of canine-assisted occupational therapy, as well as future studies in the application of activities and strategies.

Despite the procedures taken, this study contains limitations by which the results must be considered. The study was conducted with a single child, with no case control for comparison and the instrument used to measure the components of performance, engagement, and social behaviors was elaborated by the first author, without validation yet on the sensitivity of the measurement. Therefore, future studies that include case-control measures and validated instruments are needed.

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