Original Article

The Effect of a Dog Assisted Activity Programme on Elementary Students' Self-Esteem

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Abstract
Background: The Dog Assisted Activities (DAA) programmes in schools are operating for more than three decades in various countries around the word. However, their operation and relevant research and study, is very limited currently in Greece.
Aim: The initial inspiration and ultimate goal for conducting this present study was to raise awareness and promote understanding around the implementation of DAA programmes in Greece; especially in primary education. The researchers tested the hypothesis that the students' physical interaction with a trained dog may have a positive impact on their self-esteem. **Methodology:** The 44 students who took part in the study participated on a voluntary basis, and were randomly allocated into two groups: the experimental (n=19), and the control group (n=25). The experimental group interacted with a trained dog while the control group attended presentations on dog training. The researchers used a standardised questionnaire to measure and then compare the students' self-esteem scores within and between the two groups. There were two times of measurement; before (Time 0) and after (Time 1) the implementation of the DAA programme.
Results: The analysis of the results revealed a statistically significant difference in the self-esteem of the experimental group students(p=.002). Additionally, the self-esteem scores displayed by the experimental group students after the intervention were higher to these displayed in the control group (p=.012).
Conclusions: The present study's findings suggest that the DDA programmes may positively impact and enhance the self-esteem of school students. However, as that was the first time a study of this type was conducted in Greece, further research is needed so to better examine and investigate the effects of the DDA programmes on elementary students' well-being.

Key words: Dog Assisted Interventions, Dog Assisted Activities, Elementary students' self-esteem

Introduction

Self-esteem is defined as the subjective sense that a person has about their own characteristics, abilities, skills and overall 'worth', which are based on given social standards and values (Arens et al 2013; Orth & Robins, 2022; Park & Park 2015; Rahmani, 2011). This subjective sense affects their psychological and emotional status and is influenced by their own self-assessment and feedback from their social environment. The realisation and understanding of this self-assessment and 'value' is highly important for a person's psychological and emotional state and amongst other factors may affect their general/social behaviour, their way of thinking, their emotional expressions, their desires/ambitions, their values and targets set (Didaskalou et al, 2017; Kleftaras, 2004; Kleftaras & Alexopoulos 2015; Kramer et al, 2023; Leary et al, 2011).

Animal Assisted Intervention (AAI) programmes have been operating for more than three decades in various countries around

the world, and appear to benefit the psychological health of all age groups (Brelsford et al, 2017; Enders-Slegers & Hediger, 2019; McCune et al 2020; Mills & Hall, 2014; Ormerod 2005; Flynn et al, 2021). Companion animals may help children to act with patience and put in effort in order to achieve a target (Fine, 2010; Jegatheesan, 2013). Moreover, the child – dog bond appears to assist the former to better understand the notions of love and companionship and receive emotional support (Morrow, 1998; Daly & Suggs, 2010). In a school environment the presence of a dog may help students to destress, make the process of learning easier and also promote cooperation, relationships, and friendships among them (Abat-Roy, 2021; Bennetts et al, 2022; Katcher, 2002; Kruger and Serpell, 2010; Maujean et al, 2015). Moreover, companion animals may also help children to have fun, obtain relief from daily stress and participate in creative activities (O'Haire et al, 2013; Tardif-Williams & Bosacki, 2015; Meints et al 2022). According to relevant research, Dog Assisted Activity (DAA) programmes – which is one of the AAI categories – may, among others, help children to acquire a sense of responsibility and boost their self-esteem (Binfet et al, 2022; Brelsford et al, 2017; Kerns et al, 2023).

The initial inspiration for conducting this present study was to raise awareness and promote understanding around the implementation of DAA programmes in Greece; especially in primary education. According to present literature, these programmes can help to improve the students' general behaviour, psychological status and attitudes (Beetz, 2013; Le Roux et al, 2014; Meints et al 2022; Miles et al, 2017). This study tested to determine if students that took part in a DAA programme gained increased self-esteem. This is particularly important for elementary students who are thought to be emotionally sensitive as they transition to adolescence in the family, social and school environment (Chen 2014; Lohaus et al, 2004; Pace et al, 1999; Wang et al, 2019). THerefore, the present research aimed at studying the effect that a DAA programme may have on the self-esteem of students attending the last two years of elementary school.

Methodology

The present study tested the hypothesis that the students' physical interaction with a trained dog may have a positive impact on their self-esteem. The researcher designed and delivered a DAA programme, lasting approximately 2 months, at a private elementary school in the region of Attica, Greece. The 44 students who took part in the study participated on a voluntary basis, and were randomly allocated by the school into two groups: the experimental (n=19), and the control group (n=25). The study was approved by the Ethics Committee of the University of Thessaly and the students participated after they submitted parental signed consent. The experimental group interacted with a trained dog while the control group attended presentations on dog training. To test the hypothesis the researchers used a standardized questionnaire to measure and then compare the students' self-esteem scores within and between the two groups. There were two times of measurement; before (Time 0) and after (Time 1) the implementation of the DAA programme. The questionnaire used to measure self-esteem was titled *Culture Free Self-Esteem Inventories* (Battle, 2002) which is also known as CFSEI-B. It consists of 30 sentences and it is a scale of self-reporting that can be completed independently or in groups by children without any help from an adult. The highest possible score achieved is 30 while the lowest is 0. The higher the score the higher the student's self-esteem. The data collected was analysed via the Statistical Package for the Social Sciences (SPSS version 25). The demographics and characteristics of the participants were collected through the administration of a customised questionnaire which was designed in order to depict the children's previous experience, feelings and relationship with dogs. This questionnaire was first used in another similar study conducted in Greece (McBride et al, 2007). *Table 1* below illustrates the data collected. The procedure followed before and during the implementation of the DAA programme is described below:

1st Day: Self-esteem questionnaire completion (Time 0).

4th Day: Demographics' questionnaire completion.

8th Day: 1st presentation (control group) and 1st DAA session (experimental group). Over a period of 47 school days (approximately 2 calendar months) ten sessions were held in total (1 session per week for each group, lasting 45 minutes).
75th Day: 10th presentation (control group) and 10th DAA session (experimental group). The students completed the self-esteem questionnaire for a second time (Time 1) at the end of the session.
All sessions for both groups took place during semester 1, in the same teaching room, on the same teaching days but at different times. The control group attended a presentation delivered by the second researcher. The experimental group trained an already trained dog to complete a specific task under the guidance and supervision of the second researcher. During each session, the topic of the presentation and the dog training task were the same for both groups. The tasks/topics delivered during the sessions are depicted in *Table 2* below.

Due to the sensitive nature of conducting research on children, which also required the participation of an animal, ethical issues were very carefully and explicitly considered in the design. Therefore, first and foremost the study was approved by the university's ethical committee and was completely aligned with the 2010/63/EU Directive of the European Parliament for the protection of animals used for scientific purposes. Furthermore, the first researcher, was an accredited and experienced clinical canine behaviourist/trainer and conducted all necessary risk assessments prior to the delivery of the programme. During the DAA sessions the researcher followed all relevant guidelines on Animal Assisted Interventions (AAII, 2023; IAHAIO, 2019; SCAS, 2019) and, to the best of his knowledge promoted and guaranteed the dog's welfare (Winkle et al, 2020). During the study, and under school supervision and monitoring, the researcher followed the school's rules and guidelines with regards to the existing law on children's wellbeing, health and safety. Moreover, and in order to provide emotional support when needed, the school's child psychologist was available upon request.

Results

The researchers made the following control and the experimental group comparisons in order to assess the effect that the DAA programme may have on the students' self-esteem. The self-esteem within each group was compared before and after the intervention. The T-test and Wilcoxon test were used for the correlated samples according to the even or uneven distribution of the data as appropriate (Table 3, Table 4, Figure 1, Figure 2, Figure 3).

No change was observed when comparing the self-esteem of participants within the control group (p =.183; table 3); however, a statistically significant difference was observer within the experimental group (p= .002), where self-esteem increased by nearly 9% after the DDA programme was implemented (see *Table 4* above).

The self-esteem changes after the intervention for each of the two groups were compared. Moreover, the self-esteem scores of both groups were compared after the implementation of the intervention. The T-test and Mann-Whitney test were used according to the even or uneven distribution of the data as appropriate. (Table 5, Figure 4, Figure 5, Figure 6).

During this comparison, a statistically significant difference was demonstrated. The experimental group showed higher self-esteem scores after the intervention in comparison to those measured in the control group (p value $0.012<0.05$).

Moreover, during the comparison between the two groups with regards to the self-esteem change measured for each group after the intervention, no significant difference was seen (p value $0.096>0.05$).

Anecdotal qualitative data

During the DAA programme, and according to the school administration team's observations, the experimental group students revealed a general enthusiasm, which was derived from their interaction with the dog. This enthusiasm was observed both inside and outside the school environment according to parents' reports and discussions with the school administration team.

Dawson (2004) argued that children participating in AAIs express their feelings about the animal to others both orally and also through their overall attitude and general behaviour. The activities performed during the DAA sessions necessitated the coordination of the children's mind and body in order to accomplish the various dog training tasks. In every session, the children appeared to have fun. They seemed to enjoy the fact they were training a dog. Moreover, they appeared very enthusiastic when they were observing the researcher and their peers training the dog. It is worth mentioning that the total participation of all students in the DAA sessions was 10 out of 10. Both the dog presence in the school environment and the interaction with a trained dog seems to attract the students' attention and interest throughout the sessions and contribute to create a joyful atmosphere during a fun activity (Diamantakos & Kleftaras, 2012).

Table 1. Students' demographics and characteristics.

Variables	Total	Experimental Group	Control Group
Age [in years (Mean±SD)]	9.92 ± 0.59	9.73 ± 0,65	10.07 ± 0.52
Period of study in the present school [in years (Mean±SD)]	3.43 ± 2.08	3.36 ± 2,61	3.48 ± 1.62
Sex [N(%)]			
Male	18 (40.9%)	9 (47.4%)	9 (36 %)
Female	26 (59.1%)	10 (52.6%)	16 (64 %)
Country of origin [N(%)]			
Greek	22 (50 %)	12 (63.2 %)	10 (40 %)
Half Greek	16 (36.3 %)	5 (26.3 %)	11 (44 %)
Foreign	6 (13.7 %)	2 (10.5 %)	4 (16 %)
Would you like to meet a trained dog? [N(%)]			
Yes	27 (100%)	15 (100%)	12 (100 %)
No	0 (32.3%)	0 (0 %)	0 (0%)
Missing Values	17	4	13
Would you like to help train a dog to do a trick? [N(%)]			
Yes	27 (100%)	15(100%)	12 (100%)
No	0 (0%)	0 (0%)	0 (0%)
Missing Values	17	4	13
Do you feel afraid when you meet a dog you do not know? [N(%)]			
Never	16 (59.2%)	7 (46.5%)	9 (75%)
Rarely	6 (22.2%)	4 (26.7%)	2 (16.7%)
Some of the time	3 (11.2 %)	2 (13.3%)	1 (8.3%)
Most of the time	1 (3.7%)	1 (6.7%)	0 (0%)
All the time	1 (3.7%)	1 (6.7%)	0 (0%)

Missing Values	13	0	13
Have you ever been hurt by a dog, were you ever scratched or bitten, even if the dog did not mean to? [N(%)]			
Yes	10 (37%)	5 (33.3%)	5 (41.7%)
No	17 (63%)	10 (66.7%)	7 (58.3%)
Missing Values	17	4	13
Please mention any information regarding the child's behaviour during the interview that may help the study. For example, was the child happy or upset when taking about the animals. If nothing significant, please write 'O.K.'. [N(%)]			
O.K.	11 (55 %)	6 (50%)	5 (62,5%)
Happy	9 (45 %)	6 (50%)	3 (37,5%)
Missing Values	24	7	17

M: Mean Value, SD: Standard Deviation

Table 2: Sessions' content

	Topic/Task
1st Session	Train the dog to come on command
2nd Session	Train the dog to walk by the student's left-hand side
3rd Session	Train the dog to sit on command
4th Session	Train the dog to lay down on command
5th Session	Train the dog to stay while executing the sit command
6th Session	Train the dog to jump on command
7th Session	Train the dog to turn around himself
8th Session	Train the dog to lay on his side
9th Session	Train the dog to touch an item with his paw
10th Session	Train the dog to touch the student's palm with his paw

Table 3. *Mean values comparison and standard deviations (±) for Control Group (Wilcoxon test).*

Control Group	**Self-esteem**		***Z***	***p-value***
	Time 0	**Time 1**		
Control Group self-esteem before and after the intervention	23.36±2.82	24.00±3.74	-1.332	.183

*Statistically significant result (p value< 0,05).

Table 3. *Mean values comparison and standard deviations (±) for Control Group (Wilcoxon test).*

Control Group	Self-esteem		*Z*	*p-value*
	Time 0	Time 1		
Control Group self-esteem before and after the intervention	23.36±2.82	24.00±3.74	-1.332	.183

*Statistically significant result (p value< 0,05).

Table 5. *T-test, between Groups' mean values comparison and standard deviations (±).*

Comparisons	Self-esteem		*t*	*p-value*
	Control group (N=25)	Experimental group (N=19)		
Self-esteem after the intervention for each group.	24.00±3.74	26.42±1.89	-2.509	**.012***
Self-esteem change after the intervention for each group.	-0.64±2.99	-2.32±2.86	-1.667	.096

*Statistically significant result (p value< 0,05).

Figure 1. Control Group error bar chart for self-esteem before and after the intervention.

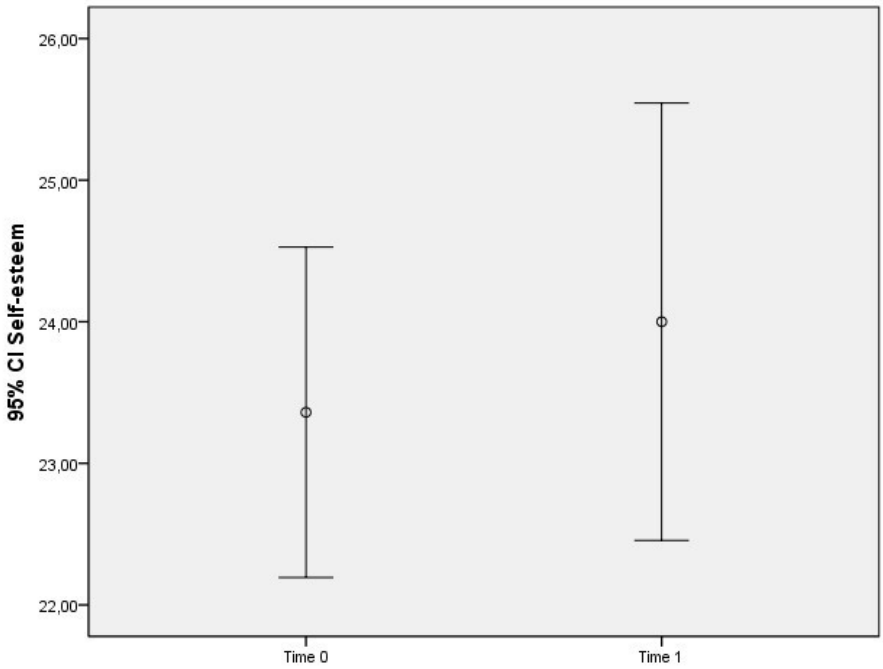

Figure 2. *Experimental Group error bar chart for self-esteem before and after the intervention.*

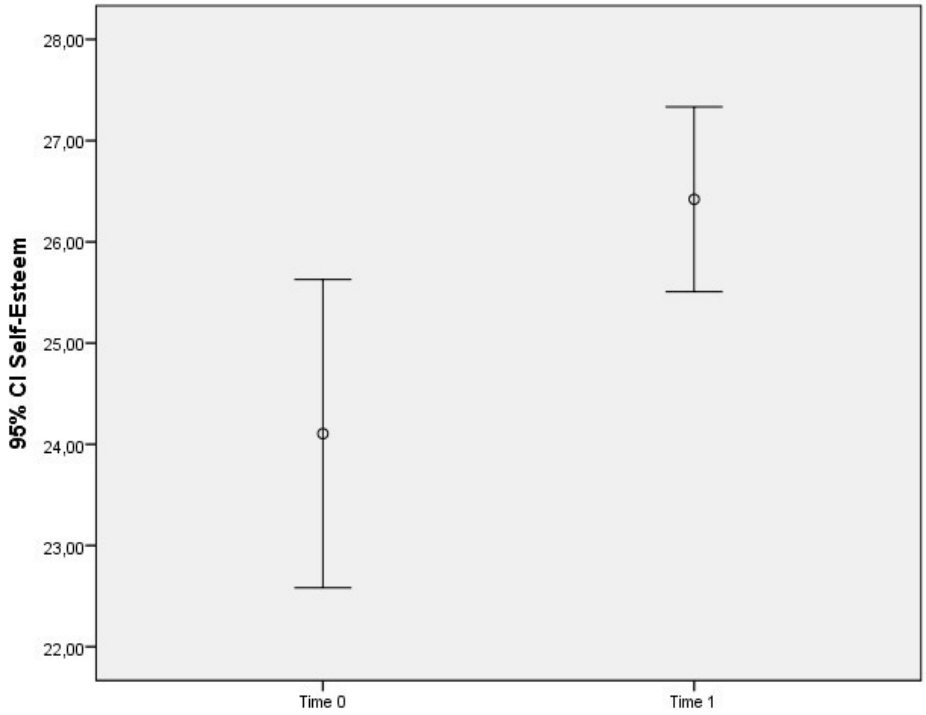

Figure 3. *Experimental Group boxplot for self-esteem before and after the intervention.*

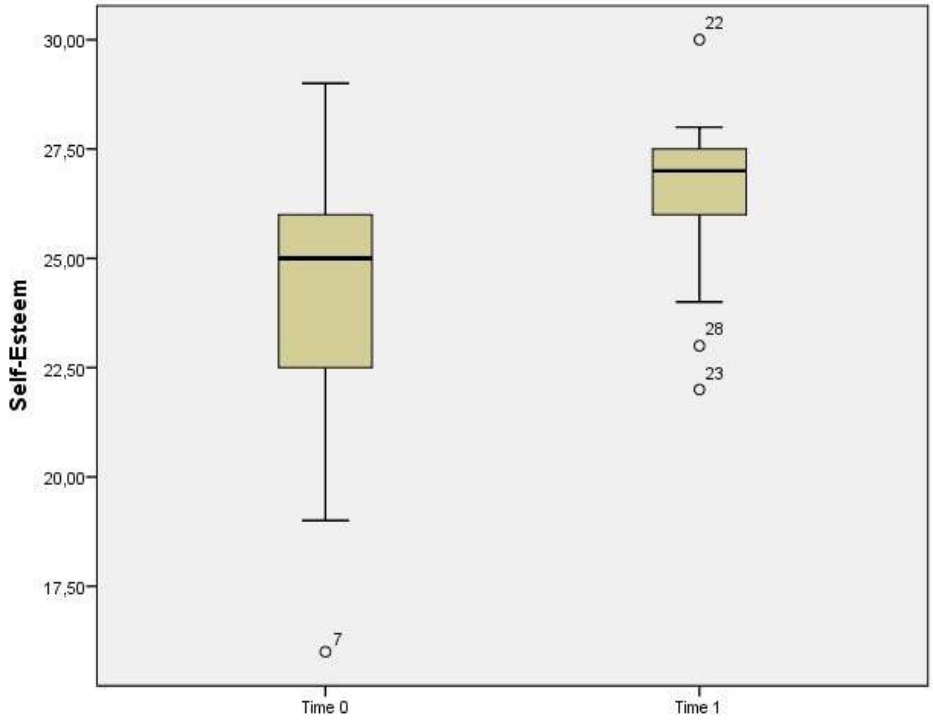

Figure 4. *Groups error bar chart for self-esteem after the intervention.*

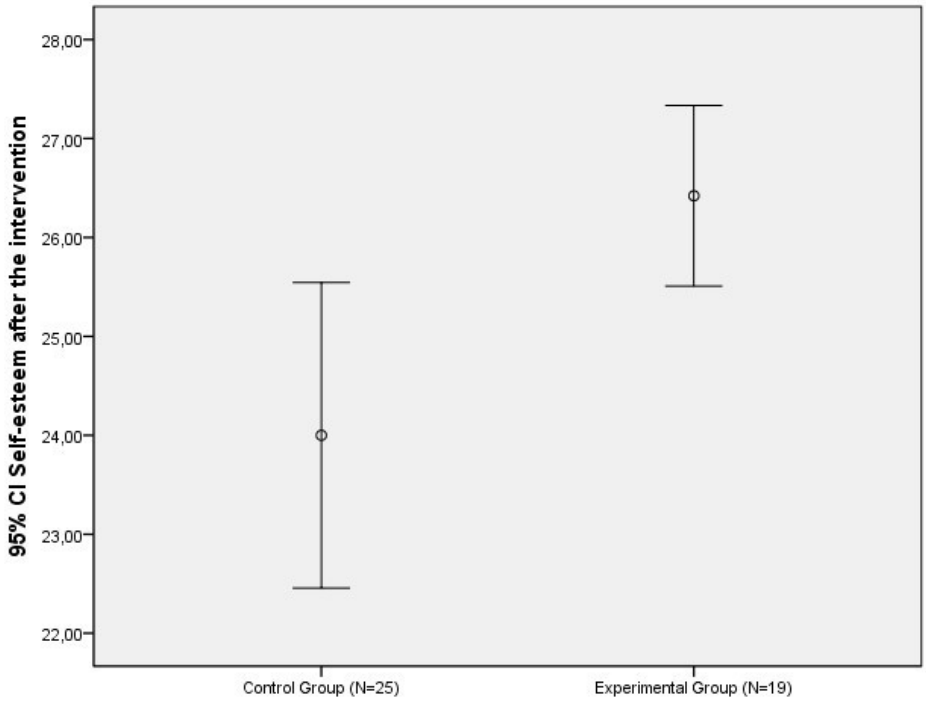

Figure 5. *Groups boxplot for self-esteem change after the intervention.*

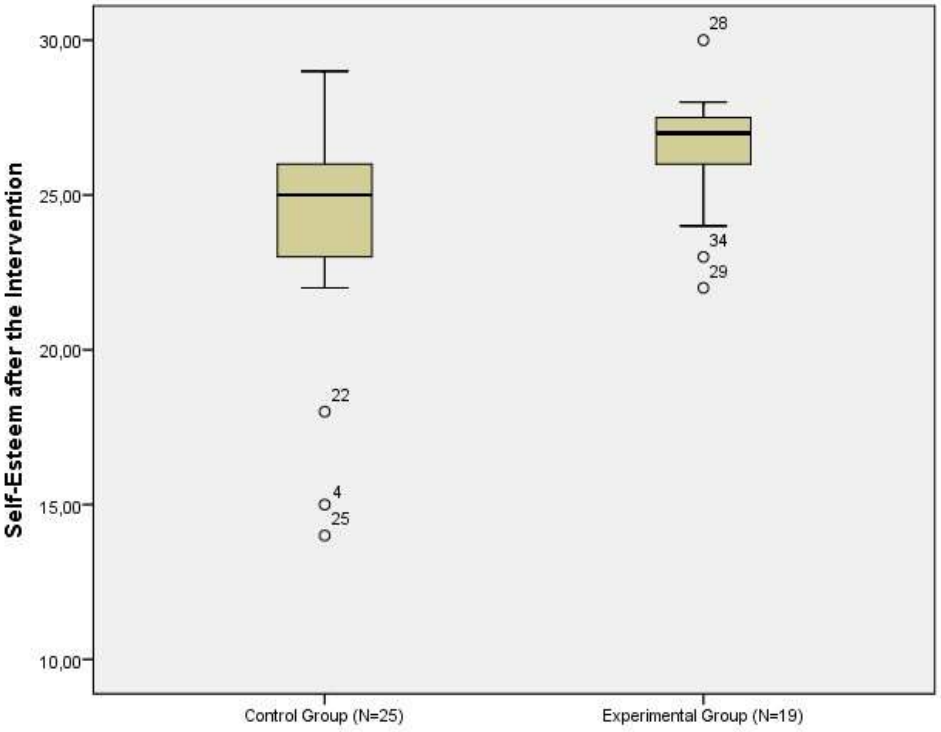

Figure 6. *Self-esteem change comparison between Groups (error bar chart).*

Discussion

The above findings add to the growing literature that people interacting with a dog during a DDA programme are psychologically benefited (Burton, 1995; Beetz, 2013; Brelsford et al, 2017; Le Roux et al, 2014; Varaco & Seminotti, 2002). In this instance increased self-esteem was observed in students aged ten to twelve. Undoubtedly, there are many factors which may potentially affect students' self-esteem in the school environment. Some of these are their relations with their families, classmates and friends. Moreover, it can also be the teacher`s attitude and behaviour towards the students, and the student's feelings and emotions towards their teacher (Sharaf et al, 2009; Cambron et al, 2010; Bokhorst et al, 2010; Harvey et al, 2022; Rucinski et al, 2018). According to this study results and keeping in mind the previously mentioned factors, it could be argued that the DAA programme may have also affected, positively in this instance, the students' self-esteem.

In relevant studies (Arens et al 2013; Orth & Robins, 2022; Park & Park 2015) self-esteem is defined as the psychological – emotional status of a person regarding their abilities and skills, based on their own self – assessment, evaluation and feedback from their social environment. It could be argued that the DAA programme may have helped the students to better value their abilities and skills during their active participation in the dog training sessions. Therefore, this increase in their self-esteem may denote a possible improvement in their overall psychological and emotional status (Rahmani 2011). Park and Park (2015) argued that students attending the last two years of elementary school, where they are undergoing transition into adolescence, will have an advantage in the development of their later social relationships if they have good self-esteem. The results of the present study have shown that the dog may stand as a means to contribute to the enhancement of their self-esteem. Therefore, and because of the overall enthusiasm the students exhibited inside and outside the school environment, it could be argued that the interaction with a dog, may potentially help them to interact better with their peers, classmates, friends and family, and further promote their social relationships. Children in the first years of elementary school tend to believe that effort and ability are the same (Bouffard et al, 2011; Graham & Taylor, 2022). This perception changes as they grow older and begin to better understand the difference between effort and ability. Arens et al (2013), argued that students in the final years of elementary school may experience a decrease in their self-esteem before their transition into adolescence. In the present study the students' interaction with the dog may have possible contributed to make them better understand the difference between effort and ability, and that has possibly contributed to their increase in self-esteem. Both Jankauskiene et al (2021) and Mehra et al (2011) argued that elementary students' participation in physical exercise activities promotes improvement in their self-esteem. The DAA programmes may act as an alternative form of mild physical exercise, which according to the results of the present study may have a positive effect on the students' self-esteem. According to Brelsford (2017) and Meints et al (2022) the DAA programmes are becoming increasingly popular in various countries around the world. Based on the researcher's and the teachers' observations, the students who participated in the present DAA programme seemed to be very happy and enjoyed their interaction with the dog. Moreover, given the results, it could be argued that the DAA programs could be introduced into various school facilities/classes in an attempt to promote further the students' mental & physical health (Jankauskiene et al, 2021; Reilly et al, 2020; Slutzky & Simpkins, 2009; Tardif-Williams & Bosacki, 2015).

During the design of the study and the implementation of the DAA programme, the researchers identified some limitations. These identified limitations may potentially affect the generalization of the study's results. One possible limitation is the uneven distribution number of participants in the experimental (n=19) and the control (n=25) groups. The number of participants in the experimental group was limited to n=19 due to time constraints and the relevant animal welfare guidelines. The existing dog welfare guidelines state that the human - dog interactions during a DAA session should not exceed 45 minutes (SCAS, 2019). As each of

the experimental group participants and the researcher were interacting for 2 minutes with the dog, and an additional 5 minutes time was needed for the introduction and the training task brief, the experimental group could not exceed the 19 participants.

Humphries (2003) and Brelsford (2017) argued that there is insufficient evidence regarding the long-term effects of AAI programmes. The present study had two points of measurement; before and after the intervention. It would have been rather interesting to measure the effects on the students' self-esteem one month, or even better six months, after the end of a DAA programme. Another element that may affect the generalization of the results` is the fact that the present sample may not accurately reflect the elementary student population in Greece. The present study took place in a private school; as it was the only one which accepted the researcher's invitation to participate in this research. Therefore, according to Hüsgen et al, (2023); Wintermantel & Grove, (2022); and Wilson and Barker, (2003), because of the size and distribution of the sample, any generalisation should be made with serious consideration of the above limitations.

Conclusion: According to the results of the present study, it seems that there may well be a correlation between the presence of a dog and the opportunity to actively participate in training the dog, in a school environment, and the self-esteem of elementary students. Moreover, it seems that the students' interaction with a trained dog and their participation in training this very dog may positively affect and improve their self-esteem. However, regardless of the possible positive role of a dog presence in the school environment, DAA programmes should not be seen as a panacea, but rather as an additional tool in a more holistic approach to improve students' psychological health. To the best of the researcher knowledge, and as far as Greece is concerned, the present study was the first to measure the effects of a DAA programme on elementary school student's self-esteem. The researchers hope that this study will inspire other researchers to conduct further research in this field not only in Greece but internationally. Future studies with bigger participant samples, from students attending both private and public schools in various geographical regions, will offer better insights into DAA programmes and their effects on students' psychological and physiological health and wellbeing.

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