



# Human-Animal Relationship through the Ages, Animal Assisted Intervention Programmes and the Role of Animals in Child Development

Evangelos Diamantakos<sup>1</sup>, Ioannis Chaniotakis<sup>2</sup>

<sup>1</sup>Animal Department, Hartpury University, Gloucestershire, UK

<sup>2</sup>Healthcare Directorate of Hellenic Air Force General Staff (HAFGS), Athens, Greece

Email: vdiamantakos@gmail.com

**How to cite this paper:** Diamantakos, E. and Chaniotakis, I. (2024) Human-Animal Relationship through the Ages, Animal Assisted Intervention Programmes and the Role of Animals in Child Development. *Open Access Library Journal*, 11: e11277. <https://doi.org/10.4236/oalib.1111277>

**Received:** January 31, 2024

**Accepted:** March 23, 2024

**Published:** March 26, 2024

Copyright © 2024 by author(s) and Open Access Library Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

## Abstract

The long-term relationship between humans and animals and the advantageous effects of animals on human health and well-being are well-documented in present literature. This relationship has evolved over the years, leading to a shift in human perception and behaviour towards animals. In our present day, Animal Assisted Intervention (AAI) programmes are regarded as contributors to human physical and psychological well-being. According to current literature, interactions with animals and AAI programmes appear to benefit children's psychological, emotional, social, and learning development. The article emphasises that while animals can contribute to children's development, this should not be considered a panacea but rather an additional means and part of a holistic intervention facilitated by accredited professionals.

## Subject Areas

Psychology

## Keywords

Human-Animal Relationship, Animal Assisted Interventions, Children Development, Children Well-Being

## 1. Introduction

In recent decades, it has been witnessed a general trend of people, especially those residing in the modern urban centers of developed countries, returning to

a natural way of life and reconnecting with the natural environment [1] [2] [3]. The modern urban environment, in combination with the organisation of society and the contemporary lifestyle within it, has solved many human/social problems and has improved the quality of life in various aspects of daily life. However, the framework in which the modern individual lives and moves, along with the significant benefits it provides, has also brought about a series of negative impacts on both physical and mental health. The lack of clean environmental atmosphere, sufficient physical exercise, quality communication and interaction with others, as well as exposure to stimuli from the natural environment, are conditions and experiences that are missing from the lives of people in advanced countries of the modern Western world [4] [5] [6] [7] [8].

Under this perspective, one of the significant aspects of modern human life is the lack of contact between humans and animals, which, as current research indicates, not only provided food and assistance in work but also contributed to physical and mental well-being [9] [10] [11]. Within this context, the international scientific community has extensively explored, among other things, the beneficial impact of animals, especially companion animals, on the management, treatment, improvement, and therapy of physical and mental health problems in humans [12]. The human-animal relationship can provide benefits to individuals of all ages [13]-[18]. The participation of appropriately trained animals, under the guidance of an experienced trainer, can be part of a therapeutic, management and/or social activity intervention program, where beneficiaries can either observe or actively participate in it [19] [20] [21] [22].

## 2. Historical Overview of the Relationship between Humans and Animals

The long-term relationship between humans and animals begins from the time when prehistoric humans discovered the nutritional value of animals—which they could hunt and kill—was crucial for their survival [23] [24] [25]. As humans began to get organised into small societies and settle permanently in various regions, a need to capture and reproduce animals emerged in an attempt to secure food in periods when hunting would not be feasible (e.g. adverse weather conditions, prey shortage/scarcity). This closer interaction with animals helped humans observe their behaviours, discover and get benefited by the products they could offer, and appreciate the services they could provide [26]. Consequently, caring for and providing food to these animals ensured a variety of benefits, including their meat, the production of high-nutrient goods (e.g., milk, cheese, etc.), skin for clothing and footwear, and also valuable assistance in safeguarding settlements, hunting, transportation, and agriculture. Over the centuries, humans' dependence on the assistance provided by animals led them in many cases to consider them “divine”, worship them, and elevate them to religious symbols [27]. In modern history, especially from the 20th century onwards, there is a distinct trend among people in the so-called “Western World” to establish closer relationships; particularly with dogs and cats. This has led to

the current perception of considering these two species, along with several other species (pets), as companion animals [28]. This closer bond has facilitated contemporary humans to (re)discover additional aspects of the benefits and contribution of animals, both in occupational fields and areas related, to their physical and psychological health [29] [30] [31].

### 3. Perceptions of the Beneficial Impact of Animals on Humans in Previous Times

The beneficial role of animals in improving the physical and/or psychological health of humans is well-documented in ancient Greek, Egyptian, Chinese and Roman civilisations and cultures [32]. According to evidence found in manuscripts and art masterpiece, there was a strong belief in the therapeutic properties of animals' presence and interaction with humans. Among them, in ancient Greece, it is remarkably notable the perception about the positive effect of horses on individuals with physical and mental disabilities; during equine-assisted therapies [33]. Additionally, animals are portrayed in many folktales, stories, and myths in various cultures as speaking, conversing, and helping humans [34]. These beliefs regarding the relationship between humans and animals may represent an internal human need for closer contact with the animal kingdom as we share many genetic similarities, and it is an integral part of the natural environment where humans live and coexist with [35] [36].

In recent history, the first reference for the utilisation of animals as a means of promoting human mental health date back to 1792 at the Quaker Retreat Residence in England [37]. Patients suffering from mental illnesses could walk in outdoor areas and interact with companion and farm animals. This activity was part of the patients' daily routine and integrated into their therapeutic programme.

The first official reports in the 21st century regarding the participation of animals in therapeutic programs can be traced back to the 1940s at the Air Force Convalescent Hospital of New York City. Animals were introduced to patients and offered encouragement, and motivation to alleviate their physical and psychological illnesses/weaknesses [38]. This was achieved through the delivery of treatment programmes involving animal care provision, interaction (e.g., touching, petting), or simple observation of animals.

In the most contemporary world, Boris Levinson [39] was the first to discuss the positive contribution of animals to clinical psychology. In a related study, he presented the conclusions of his observations regarding the beneficial role of dogs during therapy sessions with a child with psychological disorders. The study, titled "The Dog as a Co-therapist," revealed the psychologist's views on the active participation of dogs in therapy sessions. Since then, many other scientists have expressed ideas in the same direction. Among these studies, those of Friedmann *et al.* [40] and Katcher *et al.* [41] were the first to be conducted according to the scientific standards of that time, paving the way for a more careful study of the "alternative" method of Animal-Assisted Interventions.

## 4. Animal Assisted Interventions (AAIs)

One of the areas that has been extensively studied by the scientific community in recent decades is the beneficial impact of animals on the overall mental and physical well-being and health of humans [42] [43] [44] [45]. Since Boris Levinson [39] conducted the first scientifically recorded session with an animal until today, various AAI programmes have been implemented in different countries of the so-called “Modern-Western” world. The core participants of these programmes are the animal, the owner-trainer accompanying it, and the individual/s who will interact with the animal with an aim to get benefited. However, there is a very important differentiation among the various types of AAIs:

The Animal Assisted Therapy (AAT) and Animal Assisted Education (AAE) programmes require the presence of a qualified professional in the fields of health, sports, social services, or education (e.g., doctor, athletic trainer, teacher, physical therapist, psychologist, social worker, speech therapist, etc.), as appropriate, who will conduct targeted activities aimed at the physical and/or psychological well-being of the individual/s participating in them [46]. The animal should have veterinary, behaviour and obedience certification/approval issued by registered and certified professionals (e.g. veterinarian and clinical animal behaviourist). Moreover, the animals should at all times be accompanied by their owners-trainers. Last but not least, the owners-trainers should also be assessed/certified for their ability to control the animals, take care of them and promote their welfare [47] [48]. Collaboration between the professional (in the fields of health, sports, social services, or education) and the owner-trainer is necessary and crucial for the successful and uninterrupted delivery of the AAI sessions in order to benefit the individual/s who participate in these programmes.

The Animal Assisted Activities (AAAs) do not require the presence of a qualified professional as explained above in the AAT and AAE programmes. However, the collaboration between the owner-trainer and the aforementioned professionals is highly recommended and encouraged so to establish an action plan and/or conduct research/studies in the AAI field. The beneficiary’s interaction with the animal focuses on conducting activities with the aim of providing opportunities to improve the quality of the participant’s life, with key benefits including encouragement, engagement, learning, motivation and social or general well-being [46]. In these programmes—similar to the AAT and AAE ones—veterinary, behaviour and obedience certification/approval along with the owner-trainer assessment/certification for their ability to control the animals, take care of them and promote their welfare are essential prerequisites [47].

## 5. The Role of Pets in Child Development

It is a common belief among child psychologists that children identity along with the personal, social, and emotional development of children are important factors not only for their mental health but also for physical well-being [49] [50]

[51] [52] [53]. Dogs, along with other pets, are considered to positively contribute to the overall developmental process of children [54] [55] [56]. According to Kidd & Kidd [57], children who feel boredom, loneliness, or sadness tend to seek contact and engage with their pets. Contact and interaction with pets, including dogs, are seen as a “natural remedy” method to combat adverse environmental factors that disrupt the emotional balance of children [58] [59] [60]. Children appear to turn to their pets in an effort to feel comfort and security [61] [62] [63].

Social interaction among children is considered one of the most essential processes contributing to the healthy psychological development of children [64]-[69]. One of the most significant factors promoting social interaction during “middle childhood” is play. Sturner and Howard [70] argued that playing with other children helps a child become familiar with various forms of nervousness, express their feelings, deal with problems, express disagreements, find solutions, and learn the transition from a passive to a more assertive stance during a conflict, dispute, or disagreement. During play, children have the opportunity to combat the detrimental effects of loneliness and expand their social circle [71] [72] [73] [74] [75]. Pets can also promote social interaction. Children consider their pets valuable assistants in creating new friendships [36] [76] [77] [78]. The external appearance, characteristics, and behaviour of pets appear to attract the interest of other children. Whether children already know each other or not, pets contribute to “break the ice” in the entire approach/interaction and conversation process. This is further supported by findings from relevant research [79] [80] [81], suggesting that pets serve as social “lubricants” that promote and enhance social interaction among children.

Furthermore, pets seem to play a significant role in helping children better understand the concept of empathy and act with it later in their lives [82] [83] [84]. The findings of these studies revealed a relationship between owning a pet during childhood and the manifestation of humane behaviours later in adulthood. The responsibilities associated with living with a pet and ensuring its well-being appear to influence children in demonstrating empathy towards their fellow humans later in their adult lives [85] [86]. Feeling responsible for an animal and being ready to cope with both daily and potential future problems that may arise, seem to be related to how children perceive their future relationships and interactions with other people.

It has been studied that when children come into contact with animals, there is an improvement in their ability to assimilate a learning process [87] [88] [89]. Dogs appear as four-feet assistants that reduce the arousal levels resulting from external factors during the learning process. These external factors, which can be generated by various environmental stimuli, are involved in the learning process according to the Yerkes and Dodson Law [90]. Endenburg and Baarda [91] argued that dogs can positively influence a child’s sense of responsibility and increase their self-confidence. This, in turn, enhances self-esteem and promotes the thinking process [92] [93]. The results of research in applied Animal As-

sisted Therapy programmes [94] align with the initial research of Schubauer-Leoni and Perret-Clermont [95], who claimed that when children feel selfless acceptance and positive reinforcement during their social interactions, various learning processes become easier and less challenging.

## 6. Conclusion

Despite the positive results shown in the so far conducted research and study, the potential beneficial role of the animals in children well-being cannot be considered a panacea but only as an additional means and part of a holistic intervention effort for improving their physiological and psychological health and social behaviour. These interventional efforts are already provided by various professionals and paraprofessionals in the various health, care and education institutions and/or practices and it is regarded that animals may further contribute to the cure, management or treatment of children health, social and well-being issues.

## Conflicts of Interest

The authors declare no conflicts of interest.

## References

- [1] Goudie, A. (2018) *Human Impact on the Natural Environment*. John Wiley and Sons Ltd., Oxford.
- [2] Macaulay, R., Lee, K., Johnson, K. and Williams, K. (2022) Mindful Engagement, Psychological Restoration, and Connection with Nature in Constrained Nature Experiences. *Landscape and Urban Planning*, **217**, Article ID: 104263. <https://doi.org/10.1016/j.landurbplan.2021.104263>
- [3] Moran, E. (2010) *Environmental Social Science: Human-Environment Interactions and Sustainability*. Wiley-Blackwell and Sons Ltd., Oxford. <https://doi.org/10.1002/9781444319057>
- [4] Allamuratov, M. and Tlepbergenova, P. (2023) Atmosfera's Pollution as an Actual Global Problem. *Innovative Developments and Research in Education*, **2**, 42-48.
- [5] Boakye, K., Bovbjerg, M., Schuna, J., *et al.* (2023) Urbanization and Physical Activity in the Global Prospective Urban and Rural Epidemiology Study. *Scientific Reports*, **13**, Article No. 290. <https://doi.org/10.1038/s41598-022-26406-5>
- [6] Jeste, D., Lee, E. and Cacioppo, S. (2020) Battling the Modern Behavioral Epidemic of Loneliness: Suggestions for Research and Interventions. *JAMA Psychiatry*, **77**, 553-554. <https://doi.org/10.1001/jamapsychiatry.2020.0027>
- [7] Köhler, L. (2015) NHV and Child Public Health. *Scandinavian Journal of Public Health*, **43**, 29-32. <https://doi.org/10.1177/1403494814568592>
- [8] Maller, C., Townsend, M., Pryor, A., Brown, P. and Leger, L. (2006) Healthy Nature Healthy People: "Contact with Nature" as an Upstream Health Promotion Intervention for Populations. *Health Promotion International*, **21**, 45-54. <https://doi.org/10.1093/heapro/dai032>
- [9] Fine, A. and Andersen, S. (2021) A Commentary on the Contemporary Issues Confronting Animal Assisted and Equine Assisted Interactions. *Journal of Equine Veterinary Science*, **100**, Article ID: 103436. <https://doi.org/10.1016/j.jevs.2021.103436>

- [10] Hamama, L., Hamama-Raz, Y., Dagan, K., Greenfeld, H., Rubinstein, C. and Ben-Ezra, M. (2011) A Preliminary Study of Group Intervention along with Basic Canine Training among Traumatized Teenagers: A 3-Month Longitudinal Study. *Children and Youth Services Review*, **33**, 1975-1980. <https://doi.org/10.1016/j.childyouth.2011.05.021>
- [11] Pálsdóttir, A.M., Gudmundsson, M. and Grahn, P. (2020) Equine-Assisted Intervention to Improve Perceived Value of Everyday Occupations and Quality of Life in People with Lifelong Neurological Disorders: A Prospective Controlled Study. *International Journal of Environmental Research and Public Health*, **17**, Article No. 2431. <https://doi.org/10.3390/ijerph17072431>
- [12] McCardle, P., McCune, S., Griffin, J.A. and Maholmes, V. (2011) How Animals Affect Us: Examining the Influences of Human-Animal Interaction on Child Development and Human Health. American Psychological Association, Washington DC. <https://doi.org/10.1037/12301-000>
- [13] Abat-Roy, V. (2021) Service Animals and Pet Therapy in Schools: Synthesizing a Review of the Literature. *Exceptionality Education International*, **31**, 1-23. <https://doi.org/10.5206/eei.v31i1.13923>
- [14] Brelsford, V., Meints, K., Gee, N. and Pfeffer, K. (2017) Animal-Assisted Interventions in the Classroom—A Systematic Review. *International Journal of Environmental Research and Public Health*, **14**, Article No. 669. <https://doi.org/10.3390/ijerph14070669>
- [15] Enders-Slegers, M.J. and Hediger, K. (2019) Pet Ownership and Human-Animal Interaction in an Aging Population: Rewards and Challenges. *Anthrozoös*, **32**, 255-265. <https://doi.org/10.1080/08927936.2019.1569907>
- [16] McCune, S., *et al.* (2020) Human-Animal Interaction (HAI) Research: A Decade of Progress. *Frontiers in Veterinary Science*, **7**, Article No. 44. <https://doi.org/10.3389/fvets.2020.00044>
- [17] Meints, K., Brelsford, V., Dimolareva, M., Maréchal, L. and Pennington, K. (2022) Can Dogs Reduce Stress Levels in School Children? Effects of Dog-Assisted Interventions on Salivary Cortisol in Children with and without Special Educational Needs Using Randomized Controlled Trials. *PLOS ONE*, **17**, e0269333. <https://doi.org/10.1371/journal.pone.0269333>
- [18] Ormerod, E., Edney, A.T.B., Foster, S.J. and Whyham, M.C. (2005) Therapeutic Applications of the Human-Companion Animal Bond. *The Veterinary Record*, **157**, 689-691. <https://doi.org/10.1136/vr.157.22.689>
- [19] Hüsgen, C., Peters-Scheffer, N. and Didden, R. (2022) A Systematic Review of Dog-Assisted Therapy in Children with Behavioural and Developmental Disorders. *Advances in Neurodevelopmental Disorders*, **6**, 1-10. <https://doi.org/10.1007/s41252-022-00239-9>
- [20] Macauley, B. (2023) Animal-Assisted Therapy for Pediatric Patients. In: Altschuler, E., Ed., *Animal Assisted Therapy Use Application by Condition*, Academic Press, Cambridge, 119-145. <https://doi.org/10.1016/B978-0-323-98815-5.00009-4>
- [21] Nepps, P., Charles, N., Stewart, P. and Bruckno, S. (2014) Animal-Assisted Activity: Effects of a Complementary Intervention Program on Psychological and Physiological Variables. *Journal of Evidence-Based Complementary & Alternative Medicine*, **19**, 211-215. <https://doi.org/10.1177/2156587214533570>
- [22] Rossetti, J. and King, C. (2010) Use of Animal-Assisted Therapy with Psychiatric Patients. *Journal of Psychosocial Nursing and Mental Health Services*, **48**, 44-48. <https://doi.org/10.3928/02793695-20100831-05>

- [23] Salisbury, J. (2022) *The Beast within Animals in the Middle Ages*. Routledge, New York. <https://doi.org/10.4324/9781003241904>
- [24] Joy, M. (2011) *Why We Love Dogs, Eat Pigs and Wear Cows*. Conari Press, San Francisco.
- [25] Potts, R. (2017) *Early Hominid Activities at Olduvai*. Routledge, New York. <https://doi.org/10.4324/9780203700969>
- [26] Vigne, J. (2011) The Origins of Animal Domestication and Husbandry: A Major Change in the History of Humanity and the Biosphere. *Comptes Rendus Biologies*, **334**, 171-181. <https://doi.org/10.1016/j.crv.2010.12.009>
- [27] Sax, B. (1994) Animals in Religion. *Society & Animals Journal*, **2**, 167-174. <https://doi.org/10.1163/156853094X00180>
- [28] Turner, W. (2005) The Role of Companion Animals throughout the Family Life Cycle. *Journal of Family Social Work*, **9**, 11-21. [https://doi.org/10.1300/J039v09n04\\_02](https://doi.org/10.1300/J039v09n04_02)
- [29] Kruger, K.A. and Serpell, J.A. (2010) Animal-Assisted Interventions in Mental Health: Definitions and Theoretical Foundations. In: Fine, A.H., Ed., *Handbook on Animal-Assisted Therapy*, Academic Press, New York, 33-48. <https://doi.org/10.1016/B978-0-12-381453-1.10003-0>
- [30] Menna, L., Santaniello, A., Todisco, M., Amato, A., Borrelli, L., Scandurra, C. and Fioretti, A. (2019) The Human-Animal Relationship as the Focus of Animal-Assisted Interventions: A One Health Approach. *International Journal of Environmental Research and Public Health*, **16**, Article No. 3660. <https://doi.org/10.3390/ijerph16193660>
- [31] Wagner, C., Gaab, J. and HEdiger, K. (2023) The Importance of the Treatment Rationale for Pain in Animal-Assisted Interventions: A Randomized Controlled Trial in Healthy Participants. *The Journal of Pain*, **24**, 1080-1093. <https://doi.org/10.1016/j.jpain.2023.01.004>
- [32] Dale-Green, P. (1966) *Dog*. Rupert Hart-Davis, London.
- [33] Granados, A. and Agis, I. (2011) Why Children with Special Needs Feel Better with Hippotherapy Sessions: A Conceptual Review. *Journal of Alternative and Complementary Medicine*, **17**, 191-197. <https://doi.org/10.1089/acm.2009.0229>
- [34] Preece, R. (1999) *Animals and Nature: Cultural Myths, Cultural Realities*. University of British Columbia Press, Columbia.
- [35] Applebaum, J., MacLean, E. and McDonald, S. (2021) Love, Fear, and the Human-Animal Bond: On Adversity and Multispecies Relationships. *Comprehensive Psychoneuroendocrinology*, **7**, Article ID: 100071. <https://doi.org/10.1016/j.cpnec.2021.100071>
- [36] Serpell, J. (1996) *In the Company of Animals*. Blackwell, Oxford.
- [37] Parshall, D. (2003) Research and Reflection: Animal Assisted Therapy in Mental Health Settings. *Counseling and Values*, **48**, 47-56. <https://doi.org/10.1002/j.2161-007X.2003.tb00274.x>
- [38] Baun, M. and McCabe, B. (2000) The Role Animals Play in Encouraging Quality of Life for the Elderly. In: Fine, A., Ed., *Animal-Assisted Therapy*, Academic Press, San Diego, 237-251.
- [39] Levinson, B. (1962) The Dog as "Co-Therapist". *Mental Hygiene*, **46**, 59-65.
- [40] Friedmann, E., Katcher, A., Lynch, J. and Thomas, S. (1980) Animal Companions and One-Year Survival of Patients after Discharge from a Coronary Care Unit. *Public Health Reports*, **95**, 307-311.



- [41] Katcher, A., Friedmann, E., Beck, A. and Lynch, J. (1983) Looking, Talking and Blood: The Psychological Consequences of Interaction with the Living Environment. In: Katcher, A.H. and Beck, A.M., Eds., *New Perspectives on Our Lives with Companion Animals*, University of Pennsylvania Press, Philadelphia, 351-359.
- [42] Fine, A. (2019) Handbook on Animal-Assisted Therapy—Theoretical Foundations and Guidelines for Practice. 5th Edition, Academic Press, San Diego.
- [43] Flynn, E., Zoller, A., Gandernberger, J. and Morris, K. (2021) Improving Engagement in Behavioral and Mental Health Services through Animal-Assisted Interventions: A Scoping Review. *Psychiatric Services*, **73**, 188-195.  
<https://doi.org/10.1176/appi.ps.202000585>
- [44] Mills, D. and Hall, S. (2014) Animal-Assisted Interventions: Making Better Use of the Human-Animal Bond. *The Veterinary Record*, **174**, 269-273.  
<https://doi.org/10.1136/vr.g1929>
- [45] Purewal, R., Christley, R., Kordas, K., Joinson, C., Meints, K., Gee, N. and Westgarth, C. (2017) Companion Animals and Child/Adolescent Development: A Systematic Review of the Evidence. *International Journal of Environmental Research and Public Health*, **14**, Article No. 234. <https://doi.org/10.3390/ijerph14030234>
- [46] Animal Assisted Interventions International (2024).  
<https://aai-int.org/aai/animal-assisted-intervention/>
- [47] Pet Partners (2024).  
<https://petpartners.org/volunteer/become-a-handler/program-requirements/>
- [48] Society for Companion Animal Studies (2019) Animal-Assisted Interventions Code of Practice for the UK.  
<http://www.scas.org.uk/animal-assisted-interventions/code-of-practice/>
- [49] Car, A. (2016) The Handbook of Child and Adolescent Clinical Psychology: A Contextual Approach. Routledge, London.
- [50] Eisenberg, N. (2006) Introduction. In: Damon, W. and Lerner, R., Eds., *Handbook of Child Psychology*, 6th Edition, Volume 3, John Wiley and Sons, Hoboken, 1-23.
- [51] Kovacs, M. and Beck, A. (1977) An Empirical-Clinical Approach toward a Definition of Childhood Depression. In: Schulterbrandt, J.G. and Raskin, A., Eds., *Depression in Childhood: Diagnosis, Treatment and Conceptual Models*, National Institute of Mental Health, Rockville, 1-25.
- [52] Mash, E. and Wolfe, D. (2013) Abnormal Child Behaviour. Gengage Learning, Wadsworth.
- [53] Singer, E. (1992) Childcare and the Psychology of Development. Routledge, London.
- [54] Bexell, S.M., Clayton, S. and Myers, G. (2019) Children and Animals: The Importance of Human-Other Animal Relationships in Fostering Resilience in Children. In: Tedeschi and Jenkins, Eds., *Transforming Trauma: Resilience and Healing through Our Connections with Animals*, Purdue University Press, West Lafayette, 217-239. <https://doi.org/10.2307/j.ctv2x00vgg.10>
- [55] Crossman, M., Kazdin, A. and Knudson, K. (2015) Brief Unstructured Interaction with a Dog Reduces Distress. *Anthrozoos*, **26**, 649-659.  
<https://doi.org/10.1080/08927936.2015.1070008>
- [56] Maujean, A., Pepping, C. and Kendall, E. (2015) A Systematic Review of Randomized Controlled Trials of Animal-Assisted Therapy on Psychosocial Outcomes. *Anthrozoos*, **28**, 23-36. <https://doi.org/10.2752/089279315X14129350721812>
- [57] Kidd, A. and Kidd, R. (1985) Children's Attitudes towards Their Pets. *Psychological*

- Reports*, **57**, 15-31. <https://doi.org/10.2466/pr0.1985.57.1.15>
- [58] Barker, S., Barker, R., McCain, N. and Schubert, C. (2016) Effect of Visiting Therapy Dogs on College Student Stress Before Final Exams. *Anthrozoos*, **29**, 35-36. <https://doi.org/10.1080/08927936.2015.1069988>
- [59] Koukourikos, K., Georgopoulou, A., Kourkouta, L. and Tsaloglidou, A. (2019) Benefits of Animal Assisted Therapy in Mental Health. *International Journal of Caring Sciences*, **12**, 1898-1905.
- [60] Ng, Z., Pierce, B., Otto, C., Buechner-Maxwell, V., Siracusa, C. and Were, S. (2014) The Effect of Dog-Human Interaction on Cortisol and Behavior in Registered Animal-Assisted Activity Dogs. *Applied Animal Behaviour Science*, **159**, 69-81. <https://doi.org/10.1016/j.applanim.2014.07.009>
- [61] Bert, F., Gualano, M.R., Camussi, E., Pieve, G., Voglino, G. and Siliquini, R. (2016) Animal Assisted Intervention: A Systematic Review of Benefits and Risks. *European Journal of Integrative Medicine*, **8**, 695-706. <https://doi.org/10.1016/j.eujim.2016.05.005>
- [62] Bures, R. (2021) Well-Being over the Life Course: Incorporating Human-Animal Interaction. Springer, Cham. <https://doi.org/10.1007/978-3-030-64085-9>
- [63] Endenburg, N. and Van Lith, H. (2011) The Influence of Animals on the Development of Children. *The Veterinary Journal*, **190**, 208-214. <https://doi.org/10.1016/j.tvjl.2010.11.020>
- [64] Clark, E. (1989) Social Development of Children. DLC, Southbank Polytechnic, London.
- [65] Erikson, E. (1963) *Childhood and Society*. 2nd Edition, W.W. Norton, New York.
- [66] Godwin, S., Ashiabi, K. and O'Neal, K. (2015) Child Social Development in Context: An Examination of Some Propositions in Bronfenbrenner's Bioecological Theory. *SAGE Open*, **5**, 1-14. <https://doi.org/10.1177/2158244015590840>
- [67] Harris, M.A. and Orth, U. (2020) The Link between Self-Esteem and Social Relationships: A Meta-Analysis of Longitudinal Studies. *Journal of Personality and Social Psychology*, **119**, 1459-1477. <https://doi.org/10.1037/pspp0000265>
- [68] Kleftaras, G. (2004) The Child with Depressive Symptomatology and the Teacher Intervention. In: Kalantzi-Azizi, A. and Zafiropoulou, M., Eds., *School Adaptation: Prevention and Dealing with Challenges*, Ellinika Grammata, Athens, 355-381. (In Greek)
- [69] Vygotsky, L. (1962) *Thought and Language*. MIT Press, Cambridge. <https://doi.org/10.1037/11193-000>
- [70] Sturner, R. and Howard, B. (1997) Preschool Development, Part 2: Psychosocial/Behavioral Development. *Pediatrics in Review*, **18**, 327-336. <https://doi.org/10.1542/pir.18.10.327>
- [71] Arnold, A. (1975) *Your Child's Play: How to Help Your Child Reap the Full Benefits of Creative Play*. Pan Books, New York.
- [72] Myers, G. (1998) *Children and Animals: Social Development and Our Connections to Other Species*. Westview Press, Boulder.
- [73] Ne'Matullah, K., Abd Talib, N., Mee, R., Seong, L., Pek, S. and Ismail, M. (2022) The Impact of Outdoor Play on Children's Well-Being: A Scoping Review Dampak Bermain Di Luar Ruangan Pada Kesejahteraan Anak: Tinjauan Pelingkupan. *Masyarakat, Kebudayaan Dan Politik*, **35**, 282-296. <https://doi.org/10.20473/mkp.V35I32022.282-296>
- [74] Orr, R. (2003) *My Right to Play: A Child with Complex Needs*. Open University

Press, Maidenhead.

- [75] Woods A. (2017) Child-Initiated Play and Learning: Planning for Possibilities in Early Years. Routledge, Oxon. <https://doi.org/10.4324/9781315541969>
- [76] Arkow, P. (2020) Human-Animal Relationships and Social Work: Opportunities beyond the Veterinary Environment. *Child and Adolescent Social Work Journal*, **37**, 573-588. <https://doi.org/10.1007/s10560-020-00697-x>
- [77] Melson, G. and Fine, A. (2010) Animals in the Lives of Children. In: Fine, A.H., Ed., *Handbook on Animal-Assisted Therapy*, Academic Press, San Diego, 223-245. <https://doi.org/10.1016/B978-0-12-381453-1.10012-1>
- [78] O'Haire, M., McKenzie, S., McCune, S. and Slaughter, V. (2013) Effects of Animal-Assisted Activities with Guinea Pigs in the Primary School Classroom. *Anthrozoos*, **26**, 445-458. <https://doi.org/10.2752/175303713X13697429463835>
- [79] Friesen, L. (2010) Exploring Animal-Assisted Programs with Children in School and Therapeutic Contexts. *Early Childhood Education Journal*, **37**, 261-267. <https://doi.org/10.1007/s10643-009-0349-5>
- [80] Parsons, D. (2004) Perceptions Held by Pre-Adolescents of Their Relationships with Their Companion Animals. Unpublished MSc Thesis, University of Southampton, Southampton.
- [81] Sharma-Brymer, V., Dashper, K. and Brymer, E. (2020) Nature and Pets. In: Ishak, W.W., Ed., *The Handbook of Wellness Medicine*, Cambridge University Press, Cambridge, 413-422.
- [82] Mariti, C., Papi, F., Mengoli, M., Moretti, G., Martelli, F. and Gazzano, A. (2011) Improvement in Children's Humaneness toward Nonhuman Animals through a Project of Educational Anthrozoology. *Journal of Veterinary Behavior*, **6**, 12-20. <https://doi.org/10.1016/j.jveb.2010.07.003>
- [83] Paul, E. and Serpell, J. (1992) Why Children Keep Pets: The Influence of Child and Family Characteristics. *Anthrozoos*, **5**, 231-244. <https://doi.org/10.2752/089279392787011340>
- [84] Udell, M. (2020) Pets Associated with Enhanced Early-Childhood Social-Emotional Development. *The Journal of Pediatrics*, **226**, 309-313. <https://doi.org/10.1016/j.jpeds.2020.08.057>
- [85] Bao, K. and Schreer, G. (2016) Pets and Happiness: Examining the Association between Pet Ownership and Wellbeing. *Anthrozoos*, **29**, 283-296. <https://doi.org/10.1080/08927936.2016.1152721>
- [86] Wenden, E., Lester, L., Zubrick, S., *et al.* (2021) The Relationship between Dog Ownership, Dog Play, Family Dog Walking, and Pre-Schooler Social-Emotional Development: Findings from the PLAYCE Observational Study. *Pediatric Research*, **89**, 1013-1019. <https://doi.org/10.1038/s41390-020-1007-2>
- [87] Friesen, L. (2012) Grade 2 Children Experience a Classroom-Based Animal-Assisted Literacy Mentoring Program: An Interpretive Case Study. PhD Thesis, Department of Elementary Education, University of Alberta, Edmonton.
- [88] Melson, G. (2001) *Why the Wild Things Are: Animals in the Lives of Children*. Harvard University Press, Cambridge.
- [89] Sandt, D. (2020) Effective Implementation of Animal Assisted Education Interventions in the Inclusive Early Childhood Education Classroom. *Early Childhood Education Journal*, **48**, 103-115. <https://doi.org/10.1007/s10643-019-01000-z>
- [90] Yerkes, R. and Dodson, J. (1908) The Relation of Strength of Stimulus to Rapidity of Habit-Formation. *Journal of Comparative Neurology and Psychology*, **18**, 459-482.

- <https://doi.org/10.1002/cne.920180503>
- [91] Endenburg, N. and Baarda, B. (1995) The Role of Pets in Enhancing Human Well-Being: Effects on Child Development. In: Robinson, I., Ed., *The Waltham Book of Human-Animal Interactions*, Pergamon Press, Oxford, 55-70.  
<https://doi.org/10.1016/B978-0-08-042284-8.50008-6>
- [92] Reilly, K., Adesope, O. and Erdman, P. (2020) The Effects of Dogs on Learning: A Meta-Analysis. *Anthrozoös*, **33**, 339-360.  
<https://doi.org/10.1080/08927936.2020.1746523>
- [93] Tardif-Williams, C. and Bosacki, S. (2015) Evaluating the Impact of a Humane Education Summer-Camp Program on School-Aged Children's Relationships with Companion Animals. *Anthozoos*, **28**, 587-600.  
<https://doi.org/10.1080/08927936.2015.1070001>
- [94] Miles, J., Parast, L., Babey, S., Griffin, B. and Saunders, J. (2017) A Propensity-Score-Weighted Population-Based Study of the Health Benefits of Dogs and Cats for Children. *Anthozoos*, **30**, 429-440.  
<https://doi.org/10.1080/08927936.2017.1335103>
- [95] Schubauer-Leoni, M. and Perret-Clermont, A. (1997) Social Interactions and Mathematics Learning. In: Bryant, P. and Nunes, T., Eds., *Learning and Teaching Mathematics: An International Perspective*, Psychology Press, East Sussex, 265-283.